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ABSTRACT

This bibliography is intended primarily for managers and trainers but will also be of interest to employers, unions, and all parties interested in improving the competency of trade and nonprofessional workers through improved training. Materials represent the topics of needs assessment, identification of training objectives, monitoring and evaluation of training programs, measurement of trainability, assessment of organizational objectives, and the wider goals of training. Emphasis is placed on references of the "how to do it" type. Descriptions of topics covered are provided. References are divided into sections under these subject headings: the systems approach, training needs analysis (DACUM--Design a Curriculum--approach, other approaches), training objectives--general (competency-based instruction), evaluation and validation of training, and tests (selection tests, trainability tests, behavioral tests--work samples). This information is provided for each reference: author or editor, title, source (publication or publisher), date, and pagination. Most entries include an abstract. Following this section, a full alphabetical list repeats all the references and abstracts that appeared under the subject headings. Where authored, the references are listed in the alphabetical order of authors' names. If edited or anonymous, references are listed in alphabetical order of title. (YLB)

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This bibliography is a comprehensive publication which fills a gap in the New Zealand Training scene.

It is written primarily for managers and trainers but will also be of interest to employers and unions - in fact all parties interested in improving the competency of trade and non-professional workers.

The bibliography covers the topics of needs assessment, identifying training objectives, monitoring and evaluating training programmes and measuring trainability. Also included are some references about the assessment of organisational objectives and the wider goals of training. Emphasis has been placed on references of the "how to do it" type.

The bibliography starts with sections divided under subject headings. Following this is a full alphabetical list in which are repeated all the references and abstracts that appeared under the subject headings. Where authored, the references are listed in the alphabetical order of authors' names. If edited or anonymous, they are listed in alphabetical order of title, unless they are put out by an organisation whose name can be treated as an author.

At the time of writing, all included references were either available in New Zealand, or on order for a New Zealand library. Both hardcopy and fiche publications are included. Those fiche which are Eric Documents (ED) are identified by the ED numbers listed beside them. The National Library of New Zealand is a depository library for these, and has agreed to make copies available through the interloan system.

In the literature, the term "training" used by itself, means training for trade skills and non-professional skills. Unless, relevant to this topic, references about management training have been omitted, except for those relating to the training of supervisors. Some of the references describing methods could be useful to management trainers but that topic is not the primary focus of this bibliography.

A publication such as this arises from the efforts of many people.

I am grateful to Mr P. Nolan (Assistant Director, Training Development), who conceived the project and to his successor Mrs A. Burleigh who saw the project to fruition; to Mr B. Whisker (Chief Advisory Officer, Training Development) who supervised the exercise, Mrs J. Fergusson the Council librarian and, above all, Mrs J. Saxby who painstakingly carried out the research.

Derek E Wood
Director

March 1988

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DESCRIPTION OF TOPICS COVERED

Training needs analysis is also called needs assessment. It is front end analysis of jobs, skills, worker behaviour and the environment which the worker must cope with, in order to do the job. It is used to identify programme objectives, training objectives, and competency levels required. Data from training needs analysis is used to design evaluation procedures, and trainability tests. Training needs analysis can also be used to identify what does not need to be taught. Training needs analysis is an essential part of planning any new training programme, and of monitoring existing programmes. References on the methods of Training needs analysis are listed under three of the subject headings: "The Systems Approach," "DACUM," and "Other Approaches to Training Needs Analysis."

The Systems Approach is an integrated approach including training needs analysis, programme design, programme implementation, evaluation, validation and redesign. It treats all these topics as interacting parts of the same system, and also gives attention to the environment in which this system operates. For example the environment may be the organisation which the training programme is to serve. The organisation has goals of its own which should be taken into account. The environment may also be wider than this.

Competency-based instruction is also called criterion-referenced instruction. It reverses the traditional emphasis on what to teach, and instead focuses on what has been learned. Objectives for competency based instruction are written to describe what the student will do to demonstrate learning when competency has been achieved. "Competency-based" is the term used in tertiary education, while "mastery learning" refers to a similar technique used in primary and secondary schools. Sometimes these terms are used interchangably. The heading "Competency-Based Instruction" includes references about methods and about the meaning of the concepts. Most of the references under "The Systems Approach" also cover this topic. "DACUM" analyses are one way of arriving at competency objectives. References under "Other Approaches to Training Needs Analysis" may also be relevant as competency based instruction can only be used if training needs analysis is undertaken first, so as to identify the competencies required.

Training objectives have been given a separate heading because it is not easy to write practical statements of objectives, avoiding both the trite and the unachievable. Articles and books which concentrate on how to write objectives are listed here. Relevant information will also be found under "The Systems Approach," "Competency-Based Instruction," and some of the references under "Evaluation and Validation of Training."

The term "evaluation" refers to finding out whether the subjects, skills and attitudes taught have been learned as intended. The term "validation" refers to finding out whether the training programme is teaching the correct subject matter etc., and whether it achieves the wider goals it is supposed to support. References which are primarily about evaluation and/or validation are listed under "Evaluation and Validation of Training." Other references which include this topic may appear under "The Systems

Approach," "Training Objectives General," and "Competency-Based Instruction." Training objectives are relevant because practical statements of objectives are needed before success can be measured.

The section on "Tests" concentrates on methods of finding out whether applicants or trainees have the basic skills and attitudes required to make them capable of achieving competency after training. Such tests relate to specific jobs and types of skill.

THE SYSTEMS APPROACH

Note:

The Systems Approach combines organisational analysis, needs assessment, objectives setting, competency-based instruction, and evaluation.

Many references relevant to the Systems Approach could also appear under other headings in this bibliography. To cut down repetition most of them will appear here and in the full alphabetical list only.

The Systems Approach is only one of the many approaches that have arisen out of General Systems Theory (a skeleton of logic that was invented in the discipline of Biology). Most empirical disciplines have approaches that are based on General Systems Theory. In the Training literature the term "Systems Approach" has acquired a specific meaning. Other offspring of General Systems Theory also occur in the Training literature, but are not called the Systems Approach.

* * * * * * * * * *

A systems approach to education and training, edited by Alexander J Romiszowski, London, Kogan Page, 1970: 96p.
Papers presented at a conference on the systems approach held in 1969. Clearly defines "systems approach," "cybernetics" and "programmed instruction." The systems approach is divided into two categories: deterministic and probabilistic. Three major types of activity occur in a systems approach: analysis of objectives, synthesis of problem (course construction) and stages of evaluation (not covered in this book). Media and computer-assisted instruction are also covered, although the book was written when these concepts were in their formative stage.

Albrecht, Karl, "Why it's time for a systems approach to organization development," Training, v.19, n.5, May 1982: 53, 57-58, 60-61.

Allen, Robert F., "Group Norms: their influence on training," in: Training and development handbook: a guide to Human Resource Development, 3rd edition, New York, McGraw-Hill, 1987: 180-194.
The expected or anticipated ways of behaving in a group are called "norms." The development of norms in an organisation is affected by a number of key influences. These include: leadership commitment, role models, feedback, recognition and reward, skill development, initial orientation and work group support. This article considers the changing of norms through a normative systems approach to training.

Army School of Instructional Technology, The writing of training objectives, Beaconsfield, Bucks: RAEC Centre, Wilton Park, no publishing date given, 87p. (No.3 in the Series - "The Systems Approach to Training.")
Looks at the theory of training objectives - definition, need, different types - and then applies it to writing objectives using the systems approach.

Army School of Instructional Technology, Validation of training: a basic guide, Beaconsfield, Bucks, RAEC Centre, Wilton Park, Sept. 1974: 58p. (No.4 in the Series - "The Systems Approach to Training.")
The desirable characteristics of measuring instruments used in the assessment of training are validity, reliability, objectivity, freedom from contamination, discrimination and practicability. The assessment techniques discussed are questionnaires, report forms, and interviews. 8 steps in the validation of training are described. Steps 1-6 are concerned with internal validation and steps 7 and 8 with external validation of training. Course effectiveness questionnaires are appended.

Army School of Training Support, The use of tests in training, Beaconsfield, Bucks, RAEC Centre, Wilton Park, (?) 29p. (No.5 in the Series - "The Systems Approach to Training").
A guidebook for those involved in test development, test design, test administration and the validation of training. Gives examples of practical tests (performance tests) and their scoring, written tests and their marking and oral tests. Oral tests are only used when tests of another type cannot be used.

Atkins, Brian, "To what extent is a systems model appropriate to the diagnosis of training needs and the conduct of training in organisations?" Programmed Learning and Educational Technology, v.20, n.4, Nov. 1983:243-252.
An examination of the origin and content of general systems theory is followed by identification of the major characteristics of systems and brief discussion of use of models. Two ways of applying a systems model are identified, and their appropriateness is assessed in relation to particular training circumstances.

ED164745
Branson, Robert K et al, Interservice procedures for instructional systems development: task V, final report, Tallahassee, Florida : Florida State University, Center for Educational Technology, 1977: 62p.
Analysis of Army training designed to improve training. Instructional Systems Development (ISD) model formulated containing five phases; analyse, design, develop, implement and control. The final product is a five volume set of manuals.

Briggs, Leslie J, The handbook of procedures for the design of instruction, Washington D.C.: American Institute for Research, 1970, 206p.
This book presents a set of procedures for the design of instruction. The procedures may be designated as a "model." In present context, the word "model" means three things:

a. the entire process of instructional design is described in an orderly series of steps to be taken;
b. the steps, taken as recommended, are based on research findings when possible, upon psychological theory at other points, and upon common reasoning when gaps in theory and established fact are encountered; and
c. the instructional materials generated by application of the model are subjected to empirical tryout and revision (formative evaluation), before the materials are judged to be satisfactory through final (summative) evaluation. The materials may then be put into normal, or operational use with predictable outcomes. This entire process is often thought of as consisting of three major stages: course design, development, and evaluation.

This model may be said to employ "the systems approach":

a. Goals of the instruction and standards to be attained are identified in terms of learner performance.
b. Evaluative measures are designed to assess attainment of goals.
c. Alternative sets of strategies are considered for purposes of selecting materials and methods to be employed.
d. Design decisions conform to the defined "inputs" - i.e. to the entering competencies of the intended learners and to the boundary conditions represented by the human and other resources available for the development and utilization effort.

Byham, William C, "Applying a systems approach to personnel activities: Part II: developing job-related, legally defensible personnel subsystems for training, selection and appraisal," Training and Development Journal, (USA) v.36, n.1, Jan 1982: 70-75.

Byham, William C, "Applying a systems approach to personnel activities: Part III: development of content-valid personnel programs (activities)," Training and Development Journal, (USA) v.36, n.2, Feb 1982: 86-87.
Re performance appraisal.

ED234162

Campbell, Clifton P, A systems approach to the preparation and conduct of trade and industrial training, Paper presented at the American Vocational Association Convention, (St. Louis, MO) 1982. 57p.
The Instructional Systems Development (ISD) approach for establishing vocational training programs provides a methodology for gathering/analysing job information, developing instructional materials and media, conducting instruction and evaluating and improving training program effectiveness. Five phases of ISD model: analysis, design, development, implementation and control.

Campbell, Clifton P, "Instructional Systems Development: A methodology for vocational-technical training," Journal of European Industrial Training, v.11, n.5, 1987, full issue, 42p.
The priorities are changing for vocational and technical training. While the fundamental goals for training remain, emphasis is shifting from a focus on content delivery to a recognition of the importance of a systems approach. As a consequence, professionals involved with training are increasingly aware of the need for more rigour in the process by which training is developed, implemented and evaluated. The chief purpose of this monograph is to introduce training and other interested personnel to the Instructional Systems Development (ISD) approach. Collected in this one document is the essential information on the ISD process for the development and conduct of efficient and effective performance-based training programmes. For those planning a new training programme, this logical and organised approach provides a road map. Furthermore, the procedural steps presented are useful when modifying and revising existing programmes. Instructional Systems Development methodology is presented in five phases: analyse, design, develop, implement and control.

Campbell, Clifton P, "Training for employment - a systematic approach," Journal of European Industrial Training, v.9, n.4, 1985: 17-22.
Describes the instructional systems methodology for planning, developing, implementing and evaluating training programmes. It is a competency (performance)-based systems approach which ensures that trainees are taught the knowledge and skills essential for successful job performance.

Carkhuff, Robert R and Sharon G Fisher, ISD Instructional Systems design II: evaluating the instructional system, Amherst, Massachussetts: Human Resources Development Press, 1984. 151p.

Carroll, Stephen J and Craig E Schneier, Performance appraisal: a systems approach, (The Scott Foresman Series in Management and Organisations.) Scott Foresman, 1982.
Performance appraisal and review systems; the identification, measurement and development of performance in organisations.

Ferrari, Sergio, "Personnel appraisal: the system approach," Journal of European Industrial Training, v.7, n.4, 1983: 3-9.
Examination of appraisal methods reveals a relationship between such methods and the organisational structures in which they are applied. A distinction may be drawn between three main structures: chàrismatic, bureaucratic and "co-operative". The "system method" of appraisal may lead to some immediate advantages in any type of structure. It facilitates acceptance of people to allow themselves to be judged in writing insofar as the responsibility of each individual is viewed in the context of his relations with the group. The method may be useful to management, as it furnishes a constant flow of advice and proposals on how to improve work organisation and production techniques, even when the jobs themselves are being satisfactorily performed.

Gagne, Robert Mills, and L J Briggs, Principles of instructional design, New York, Holt, Rinehart and Winston, 1974.

Goldstein, Irwin L, Training: program development and evaluation (Behavioral Science in Industry Series II) Monterey: California: Brooks-Cole, 1974.

Hunt, G J F, "NEBEAT - The systems approach updated," Programmed Learning and Educational Technology, v.21, n.11, Fall 1984:53-60.
An information processing curriculum design and delivery model called NEBEAT, (Needs Based Education and Training), is described in relation to behaviorally based systems models. Four major components of curriculum design are examined as features which differentiate NEBEAT from its antecedents.

Hunt, Graham J F, "Needs assessment in adult education: Tactical and strategic considerations," Instructional Science, v.15, n.3 1986: 287-296.
Examines differences between needs assessment (process of determining the gap between what is and what should be) and task analysis (definition and classification of tasks to improve job performance) and discusses the human productivity model NEBEAT (Needs Education and Training Model) which defines competency as synthesis of processes and products.

Instructional design: principles and applications, edited by Leslie J Briggs, Englewood Cliffs, N.J., Educational Technology Publications, 1977.

Kaufman, R, Identifying and solving problems: a system approach, 3rd edition, San Diego, University Associates, 1982:

ED239320
Lashbrook, Velma J, An approach to designing training and development programs, Paper presented at the Annual Meeting of the Speech Communication Association, (69th, Washington, D.C.), 1983. 12p.
Systems approach to effective instructional design applicable to educational and organisational settings and including six components; needs assessment, systems design, curriculum development, organisational development, feedback and evaluation, and outcomes. Information on these components.

Mager, Robert F, Goal Analysis, 2nd edition, Belmont, Calif.: Pitman Learning, 1984: viii, 139p.
The goal of this book is to help you know when and how to do goal analysis, which means: 1. be able to identify statements that describe abstractions and those that describe performances, 2. Having identified a goal that you consider important to achieve, be able to describe the performances that represent your meaning of the goal. In other words, be able to describe specific outcomes that, if achieved, will cause you to agree that the goal is achieved.

Mager, Robert F, "Industry's training methods: do they have a place in academe?", Engineering Education, v.72, n.2, Nov. 1981:148-153.
Summarizes key differences between academic and industrial settings and offers illustrations of what modern instructional craft has accomplished in industry. Describes a typical developmental sequence related to criterion-referenced instruction, including techniques for instructional analysis, design, development, and implementation. Includes recommendations and applications of these procedures to academia.

Mager, Robert Frank, Instructional module development, Los Altos Hills, California: Mager Associates, 1977.

Mager, Robert F, Measuring instructional results, 2nd ed. Belmont, California: Pitman Learning, 1984. 166p.
Designed for people who want to know how well their instruction works and how to develop the basic tools to measure instructional results. Establishes that the measurement of success is accomplished mainly through the development of test items that match each objective in scope and intent. Concentrates on criterion-referenced evaluation methods to gauge performance.

Mager, Robert Frank, Preparing instructional objectives, Revised 2nd ed. Belmont, California: Pitman, 1984. 135p.
An objective describes the intended result of instruction rather than the process of instruction. Useful objectives describe 1. performance (what the learner is to be able to do) 2. conditions (important conditions under which the performance is expected to occur) and 3. criterion (the quality or level of performance that will be considered acceptable). Using a layout intended to facilitate learning, this book guides you through the process of recognizing and writing objectives. Examples to practise on are included.

Mager, Robert Frank, Troubleshooting the troubleshooting course, California: Pitman, 1982. 201p.
How to detect errors in what is taught and how it is taught in courses designed to teach equipment maintenance. Covers setting up a training programme for "troubleshooters" and includes flow diagrams and skill hierarchies.

Mager, Robert Frank and Kenneth M Beach Jr, Developing vocational instruction, Palo Alto, California: Fearon, 1967.
How to use a systematic course development process to facilitate students' learning.

Mager, Robert F and Peter Pipe, Analyzing Performance Problems, 1st edition, Belmont, California, Fearon Pitman, 1970, 109p.
Performance problems may be due to a lack of training or they may be caused by obstacles to correct performance that have nothing to do with a skill deficiency. The authors explain how to distinguish between the

two types of performance problem. They ask if the person has the skill and is out of practice, or, whether performance of the skill is punishing, whether non-performance is rewarded, whether the person thinks the performance matters, or whether there are obstacles to the performance. Using the method described here the job analyst can distinguish between those situations where a training course will solve the problem, and those where such a course will not solve the problem.

Mason, Mike, "Systems approach," Tutor, 33, Nov. 1986: 70-72.
The systems approach described briefly. It includes analysis of the training need, the training objective and development of instruction.

Morgan, Robert W, "Job Corps innovations in retrospect," Performance and Instruction, v.20, n.4, May. 1981:21-23.
Characterises the Job Corps experience as the first significant application of the systems approach to instructional development, and discusses the project's mission, trainees, training environment, training programs, needs assessment, student learning units, group training techniques, effectiveness in preparing trainees for jobs, and cost benefits.

ED118900
Myers, W E, Training and technology: a systems approach for industrial training, Oak Ridge Associated Universities, Manpower Development Division, 1973. 52p.
Analysis of the Training and Technology (TAT), Industrial Skill and Technical Training (ISTT), program. Presented within an input-output systems framework, the systems model that underlies industrial production. Four functions of the model; the intake process, training process, process of placement and program administration.

ED270578
Orr, William T, Jr, "Advisory Committee evaluation of vocational education programs," Sanibel, Florida Educational Research and Development Council Research Bulletin, v.19, n.1, Summer 1985: 49p. obtainable in ERIC document form.
Program advisory committees in vocational education have traditionally been charged with the responsibility of evaluating programs for the purpose of keeping them up to date with business and industry practices and current technology. Rapid technological development and accountability requirements have led to state mandates that the advisory committee evaluation be given closer attention. Through an evaluation of the literature and practice, it was learned that there is a lack of systematic methodologies for advisory committees to use in evaluating programs. The Program Advisory Committee Evaluation System (PACES) was developed to fill this gap. The PACES model was developed through a systems approach to the problem. The model was conceptualized through analysis and synthesis of existing information about vocational education, program advisory committees, program evaluation, and systems design. The model was validated through critical examination by recognized experts and practitioners and through tests of operational feasibility conducted in schools. The

model consists of four major functions or subsystems: advisory committee training, data gathering, data organization, and analysis and communication of findings. The system is designed to enable advisory committees to evaluate programs on factors found to be within the realm of expertise of advisory committee members, excluding factors that belong to the realm of school, district, and state administrators. When properly implemented, the PACES system should provide vocational education program operators with information related to the needs of the businesses and industries who employ program completers, so that they can make program decisions from an informed base. A six-page reference list is appended.

Pekich, John, "Try this simple 'systems approach' to determining training needs and methods," Training, v.14, Sept. 1977: 47.

Powel, Ray, The Instructional Systems Model for vocational education: a manual, Singapore, Colombo Plan Staff College for Technician Education, 1983: 87p.
This manual was written to be used in conjunction with training seminars for the vocational educator in Sri Lanka. It is designed to demonstrate the basic steps that facilitate learning. It describes the steps that must be carried out if one is to become as expert in the skill of course development, as many teachers are in the practice of their own vocational speciality. The procedure is not specific to a subject matter, but applies to many academic, as well as vocational and technical areas.

Rogoff, Rosalind L, The Training Wheel: a simple model for instructional design, New York, John Wiley and Sons, 1987: 151p.
The book that grew out of the idea expressed in the 1984 article. This book proposes a middle ground where instructural designers (who want to fit everything into an ISD model) and subject matter experts (who want to do a knowledge dump for every class) can meet and reconcile their different approaches to training. The result - a clear-cut four phase instructional design model that includes gathering data, analyzing data, developing solutions and taking action.

Romiszowski, Alexander Joseph, Designing instructional systems, London: Kogan Page, 1981.
Decision making in course planning and curriculum design.

Rosenberg, Marc J, "The ABCs of ISD, (Instructional Systems Design)," Training and Development Journal, (USA), v.36, n.9, Sept. 1982: 44-50.
The Instructional Systems Design (ISD) model presupposes that a front end analysis of the problem has been done to determine what solution is best, and that training has been chosen as the solution. ISD has five major phases: analysis, design, development and implementation are sequential phases. The fifth phase, evaluation, is ongoing throughout the other phases. Analysis is a needs assessment phase. It looks at organisation needs, learner needs, and job needs (i.e. performance requirements). The design phase has a distinct framework which outputs

specifications for the development phase. The development phase outputs student materials, instructor materials, other equipment and tests. Evaluation is taking place of the quality of the data going into, and the output coming from, each phase. The implementation phase allows evaluation to take place under actual training conditions. The ISD model is more than a sequence of events, it depicts a relationship between events.

Rummler, Geary A, "Determining needs," in:
Training and development handbook: a guide to Human Resource Development, 3rd edition, edited by Robert L Craig, New York, McGraw-Hill, 1987: 217-247.

Rummler, Geary, "How to determine what problems can - and can't - be resolved by training," Training, v.13, n.8, Aug 1976: 18-21.
Use performance analysis to determine what problems can - and can't - be resolved by training. Determine: 1. precisely what the problem is, 2. the priority of solving the problem, and 3. the probable causes of the problem. This article contains a copy of the forms used for a 'Request For Development of Training,' which is a questionnaire intended to be used to guide managers through an objective analysis of the problem. It also contains a section in which to examine the ratio of projected value to projected cost of the proposed training.

Rummler, Geary A, "You need performance, not just training," Training, v.14, Oct 1977: 50-53.
Training should be measured by improved performance, not training hours. You need 'performance analysis'. Performance is a function of the individual and the job environment, any modification has to deal with both parts. The 'performance system' has 5 parts only one of which is the performer. Training by itself is almost never an appropriate solution; the cause of performance problems is almost always a combination of 'faulty' components in the performance system. There is a need to analyze all causes and put together comprehensive solution strategies. This solution goes beyond training and can be called 'performance engineering.'

ED211713

Schultz, Russel E and Harold Wagner, Development of job aids for instructional systems development, Alexandria, Va., Human Resources Research Organisation, 1981. 63p.
Development of Job Aids, ("how to do it" guidance tools and procedures) used by laypeople using the Instructional Systems Design (ISD) model. Job Aid was found to eliminate problems associated with the five phases of ISD, (analysis, design, development, implementation and control). Job Aids was recommended for use throughout the entire ISD process.

Smith, Martin E, "Evaluating training operations and programs," Training and Development Journal, (USA), v.34, n.10, 1980:70-78.
Presents a systems model and a planning guide for evaluation. Model formulated by Brethoneer and Rummler, (1976).

Sticht, Thomas G and Larry Mikulecky, Job-related basic skills: cases and conclusions, Columbus, Ohio: The National Center for Research in Vocational Education, Ohio State University, 1984. 39p.
The final section, "Guidelines and methods for developing occupationally related basic skills programs," contains information on program development approach. This method uses the five areas of analysis, design, development, implementation and evaluation.

Stolovitch, Harold D, "Performance technology: an introduction," Performance and Instruction, v.21, n.3, Apr. 1982:16-19.
Introduces performance technology as a field of application for training professionals. The term "performance technology" is defined and explained, the epistemological foundations of performance technology are outlined, the relevance of performance technology to training and human development is described, and myths about performance technology are discussed.

ED248879
Sullivan, R F, Toward an integrative open-systems model of instructional development in education and non-educational organisations, Buffalo, New York:State University of New York, 1982. 374p.
Survey on the open systems model of instructional development, (ID), proposed for educational and non-educational organisations. Focus on 26 behaviors practised in the development of instruction. Survey revealed that while there are isolated differences between education and business respondents, both sub-groups follow the same basic ID process.

Systems approach to instructional design, edited by Thomas T Liao and David C Miller, Technology of Learning Systems Series, vol. 1, Farmingdale, New York, Baywood, 1978.

Tracey, William R, Designing training and development systems. Revised edition. New York: Amacom, 1984. 503p.
Has a chapter on the systems approach, which covers needs analysis, objectives, program design and evaluation. The chapter on needs analysis defines four assessment types, gives various methods, and includes checklists. There are chapters on training objectives, selecting media and training strategies, developing training materials, selecting instructors and trainees, evaluation and following up graduates.

"Training today: don't forget systems approach to program design," Training, v.19, n.9, Sept. 1982:
Editorial comment.

Warren, Malcolm W, Training for results: a systems approach to the development of human resources in industry, 2nd "edition" Reading, Massachusetts: Addison-Wesley, 1979.
Presents training as a system with components flexible enough to fit into different models, depending on the needs and resources of the

individual organisation. Includes examples of different approaches to training and provides charts and checklists to serve as planning and evaluation guides.

ED209239

Watson, R, Instructional systems development, Paper presented to the International Congress for Individualised Instruction, 1981. 12p.
The U.S. Army chose the ISD approach to training for the entry level soldiers with low educational backgrounds. Normal five ISD phases with each phase consisting of; description of target population, skills and knowledge required for each task, behaviorial objectives and criterion-referenced test items.

ED219591

Weston, Kathleen M, The apprenticeship and blue collar system: Putting women on the right track, San Francisco: Urban Management Consultants of San Francisco Inc., 1982. 230p.
This guide provides a systems approach to increasing the numbers of women in apprenticeships and skilled blue collar jobs, which form the Apprentice and Blue Collar, (ABC), system. The chapters follow the progress of a 'typical' woman through the system - outreach and recruitment, orientation, counselling and tutorials, training, referral, job development and follow-up. There is emphasis on overcoming sex stereotyping in non-traditional occupations.

Zemke, Ron, "The systems approach: a nice theory, but...," Training, v.22, n.10, 1985: 103-108.
Results of a readership survey of whether firms actually do the component parts of a systems approach. They found distinctly different "clusters" of practices under the systems umbrella. They concluded that, out there in the real world, it is more the exception than the rule to be practicing a rigorous, full-scale systems approach the way the text books spell it out. Something called a systematic approach to the design, development and delivery of training is alive and well in the field. It is not, however, a single, universal set of practices followed by even a large minority of trainers. What "systematic" means depends a lot on the practitioner, the industry in which he works and the size of his organization.

TRAINING NEEDS ANALYSIS

DACUM APPROACH

Note:

The term "DACUM" stands for "Design a Curriculum." It is one of the methods which can be used to identify competencies for competency-based training. It is sometimes used as part of the Systems Approach.

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ED275870

Anderson, Tony and Neil Jones, TAFE curriculum research: a review of group process methods, Payneham (Australia), TAFE National Centre for Research and Development, 1986: 182p.

The issue of how to react quickly to the educational needs arising from technological change has been deemed a central problem facing Technical and Further Education (TAFE) in Australia. Therefore, a national study examined various curriculum research methods that hold promise for speeding up the curriculum research and development process. The first phase of the study consisted of a description and analysis of group process methods. The following methods were analyzed: the Nominal Group Technique, the Developing a Curriculum Process (DACUM), the critical incident technique, Force Field Analysis, and brainstorming. It was concluded that the Search Conference, Delphi and exploratory methods, and, to a lesser extent, the Nominal Group Technique hold promise for providing data for adapting curriculum to occupational structural change. DACUM, while a promising method of obtaining data in the cognitive domain, may need to be linked to other methods that are more sensitive to change when used as a curriculum research procedure on occupations undergoing structural change, the critical incident technique can be advantageous in curriculum research for short courses, and Force Field Analysis appears best suited for use as an adjunct to other group process methods. In addition to describing the research project and its findings, this report includes several chapters of practical guidelines on using and blending the various group process curriculum research methods. Appendixes include descriptions of some questionnaire methods used and a sample search conference, observational studies, and a DACUM chart. Four pages of references and figures and tables are included.

ED275871

Anderson, Tony and Neil Jones, The facilitation of curriculum research workshops in TAFE, Payneham (Australia) TAFE National Centre for Research and Development, 1986: 114p.

The processes entailed in facilitating or leading workshops or seminars for researching the curriculum in Technical and Further Education (TAFE) were examined by using a modified Delphi process, which was followed by a 2-day workshop. Participants in the study were all experienced curriculum development specialists with knowledge of one or more of the following group process methods: Search Conference, Nominal Group Technique, developing a Curriculum (DACUM) and its derivatives, and the Critical Incident Technique. The facilitator role was examined in terms of the value orientations (preferences) and social rules (guides for action) used by experienced TAFE facilitators/group leaders. The facilitator/group leadership process was shown to require complex interpersonal skills, including the ability to set clear directions in a nonauthoritarian manner, negotiate flexibly with group members, face and resolve conflicts, and motivate groups. A model of the general stages and steps through which curriculum research workshops progress and a guide to the selection of group process methods for curriculum research in vocational education were developed on the basis of these research findings. Appendices include instructions to the participants in the study workshop, a summary of the workshop examining the facilitator role, detailed results concerning facilitators' value orientations and social rules, and an example of personal constructs data. A four-page reference list and tables and a figure are included.

Beck, Arthur C Jr and Ellis D Hilmar, "Training for 'organization' results," Training, v.16, n.4, April 1979: 74, 76-79.

Although not directly about validation, this article makes points that anyone involved in validation and evaluation needs to take into account. It says that the critical question is: what contribution did the training event make to a desired organizational outcome or result? The organizational result is outside of the individual or the individual unit. Activities, such as seminars, may be well run, yet not have the desired organizational result. Trainers need to take a problem solving approach to identify the desired organizational result.

Burleigh, Adrienne, "DACUM: industry involvement in training needs analysis: (but where does the tutor fit in?)," Tutor, v.29, 1984:26-29.

Describes the process of training needs analysis by the DACUM, (Design a Curriculum), method, and defines the important role of tutors in validating and preparing courses.

Burleigh, Adrienne R, The DACUM trail and other intersecting paths, Wellington, Vocational Training Council, 1986: 45p.

A report of a Fulbright-Hayes study tour of the United States with additional learning experience in Canada, Hong Kong and Singapore. Gives a brief history of DACUM in the visited countries, and describes the work of organisations visited. Names and addresses of contacts are given. Describes how physics is taught as "The Principles of Technology." Mentions the need for competency based teacher education. Is a useful reference for the meanings of acronyms referring to organisations or programs in the countries visited.

ED178696

Finch, Curtis R and John R Crunkilton, Review and critique of strategies for determining career education curriculum content, Blacksburg, Virginia: Virginia Polytechnic Institute/State University, 1979. 13p.
Consideration and comparison of major curriculum development methods such as theoretical base, philosophical base, introspection, function approach, task analysis, Delphi approach, critical incident technique and DACUM. Includes a summary of what each technique involves.

ED277433

Grulick, Larry, The DAPLAN process: a training manual, Florence S C, Florence-Darlington Technical College, 1986: 47p.
Prepared for use in South Carolina's technical and community colleges to promote the development or revision of a long-range plan, this manual describes a plan-development process using the basic techniques of the Develop a Curriculum (DACUM) process and revising them into a procedure for Developing A Long Range Plan, the DAPLAN process. DAPLAN consists of an analysis of the organization's needs developed through a modified brainstorming process by a panel of top-level administrators from the college under the direction of a qualified facilitator. The product of the process is a chart of major categories that describe the ultimate two-year technical college combined with characteristics and actual goals used to direct the institution. Chapter I of the manual presents background information on the DAPLAN process and its initial application at Florence-Darlington Technical College (FDTC), including a definition, historical background, an explanation of the use of the DAPLAN chart and the role of the DAPLAN facilitator, and information on the manual. Chapter II offers information about convening a 2-day brainstorming workshop, covering selection of panel members, workshop schedule, costs and budgeting, physical arrangements, workshop personnel, and support staff. Chapter III is devoted to the role of the DAPLAN facilitator in promoting group interaction; orienting the panel; presenting an overview of the entire DAPLAN process; leading the panel; guiding the panel in refining goals statements; obtaining closure; providing follow-up activities; and evaluating the DAPLAN process. After chapter IV explains how the DAPLAN chart is used in the development of a 5-year plan, chapter V describes how DAPLAN can be used in an annual critique and updating process. FDTC's annual plan for 1985-86 and DAPLAN chart are appended.

ED263327

Hoggard, David and Melvin J Pedras, Utilizing the DACUM process in the development of a CAD curriculum, paper presented at the American Vocational Association Convention (Atlanta, GA., Dec. 6-8, 1985).
Originally created in the late 1960s, DACUM (Developing a Curriculum) is a method for conducting an occupational analysis that identifies the tasks that must be performed by persons employed in a specific job or occupational area. As a result of the occupational analysis, a profile chart is developed that identifies the duties and tasks associated with the occupation being analyzed. The process involves use of a group of expert workers from the occupational area who are guided through a brainstorming session to reach consensus on the skills required for successful workers in that occupation. The DACUM process is quick (two to three days), inexpensive ($500 to $1,000) in comparison to

traditional occupational analysis, and has excellent public relations value. The competency profile can be used in development of competency-based instructional programs. Clark County Community College used the DACUM process to develop a computer-assisted drafting (CAD) program. A panel representing supervision and workers/technicians was established. This panel modified a description of a CAD technician and identified the duties and appropriate tasks. These duty and task statements were organized in a logical sequence (profile chart). (The CAD profile chart is appended).

Jala, Tom, "Getting on TRAC(K), or how to end the band-aid approach to training," Canadian Vocational Journal, v.15, n.3, 1979:21-28.
TRAC = Training Resources Applied to Coal.
Description of a case study application of TRAC1, a systems engineering approach, was used including the application of 'anasythesis' (analysis, synthesis, modeling and simulation) and DACUM methods were used.

Lawrence, D, "The curriculum, DACUM and the future: beware of the camel's nose," Tutor, v.29, Nov. 1984:34-37.
The advantages and disadvantages of one form of job analysis - the DACUM process.

ED205724
Lund, Brishkai and Sandy McGechaen, C E programmer's manual, Vancouver, British Colombia University, Centre for Continuing Education, 1981. 155p.
Reference guide for continuing education planners providing basic information on DACUM and delivering such programs. Outline of seven areas of competence for programmers: assessment of community needs, planning of courses and programs, promotion and marketing of courses and programs, management of personnel, practice of communication skills and evaluation of conduct.

Macklin, Nigel Eyre, A descriptive analysis of DACUM as a system for curriculum design in post secondary education, Coquitlan, B.C., the Author, 1985: vii, 88p.

ED226141
Middleton, M A, Task analysis and validation procedures of DACUM, Victoria, British Columbia: British Columbia Dept. of Education, 1981. 101p.
Study of difficulties associated with the DACUM process of the British Columbia Ministry of Education through task analysis of a hunter's job. Establishment of a set of procedures designed to improve DACUM. Use of task statements, distributed for response and then examined. Provides information on relative importance of tasks.

ED216205
Nelson, Orville, and Harold Halfin, Emerging skills: implications for voc. ed. information series No. 234, Columbus, Ohio: National Center for Research in Vocational Education, 1982. 43p.
Importance of keeping up to date with technology in the U.S. Need to change skill requirements and develop new ones for new jobs. Methods

for identifying new skills include: advisory committees, creative insight, DACUM, the Delphi process, evaluation studies, industrial work experience, labor market surveys, conferences and task analysis. Need for vocational programs to become more flexible.

New Zealand Employers' Federation, Technical education and the world of work, A discussion paper. Wellington: New Zealand Employers' Federation, 1985. 32p.
A discussion paper about vocational education and its relationship with the world of work as perceived by the New Zealand Employers' Federation. It briefly covers employer philosophies, definitions, aims and general training objectives in relation to vocational education, the role of technical institutes and community colleges, training needs analysis, (recommending the DACUM process), competency-based qualifications and educational standards.

ED254657

Norton, Robert E, DACUM handbook. Leadership training series, No.67, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985. 203p.
A handbook designed to prepare selected people for the roles of DACUM facilitator and/or co-ordinator. Definition of DACUM.
This handbook is designed for use in workshops designed to prepare selected persons for the roles of Developing a Curriculum (DACUM) facilitator and/or coordinator. (The DACUM process is a low-cost approach to occupational analysis based on the premises that expert workers can describe their jobs better than anyone else can, any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and all tasks have direct implication for the knowledge and attitudes that workers must have in order to perform the tasks correctly). The first part of the guide describes the scope and aims of DACUM and the role of the DACUM coordinator. Discussed next are procedures for planning a DACUM workshop and selecting DACUM committee members. Guidelines for conducting a DACUM orientation, facilitating group interaction, and constructing a DACUM chart are set forth. Concluding the guide are instructions for verifying tasks and producing a DACUM chart. Appendixes to the guide (the bulk of the document) include a brief history of DACUM as well as various sample letters, forms, charts, and verification instruments for use in implementing a DACUM workshop.

Norton, Robert E, DACUM handbook, Columbus, Ohio, National Center for Research in Vocational Education, 1985: vii, 204p.
A hardcopy version of ED254657. (See above).

ED223786

Norton, Robert E, Research and development related to future trends in the training of trainers, Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education, 1982. 26p.
Research on the training of trainers in the United States focussing on technological updating, identification of new trainer competencies: the DACUM approach and an American Society for Training and Development (ASTD) Study. Trends and developments were found in such areas as competency-based education, distance education, the changing roles of the instructor and the establishment of a National Academy for Vocational Education.

ED164746

Norton, Robert E et al, The identification and national verification of competencies important to secondary and post-secondary administrators of vocational education. Final report: development of competency-based instructional materials for local vocational education administrators - Part I. Research and development series No.141, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education. 1977. 120p.

Research undertaken to identify and nationally verify competencies important to local administrators of vocational education. DACUM used to extend skills located in a literature search, and the competency statements were incorporated in a Task Inventory Instrument. Submitted to different administrators and analysed.

ED281588

Nunes, Stephen A and Thomas F Halloran, Elements for a training design: an assessment of competencies for effective ABE instructors, Fl. Miami-Dade Community College, Center for Adult Education, 1987: 13p.

The Center for Adult Education at Miami-Dade Community College (Florida) conducted a project to design a training program for adult basic education (ABE) instructors focusing on the specific skills and generic competencies that were associated with instructor success. The best source of information about the elements that constituted a successful ABE instructor was felt to be a group of ABE instructors who were perceived to be successful. "Successful" ABE instructors were nominated by administrators and other instructors to participate on a panel that was to identify and classify the skills and competencies which, in their estimation, constituted successful performance. Using the DACUM (Developing A Curriculum) process, the panel reached consensus on the following competencies and their rank order: (1) understanding the adult learner; (2) personal qualities; (3) knowledge of the field; (4) knowledge of teaching techniques; (5) creativity; (6) communication/interpersonal skills; (7) professionalism; and (8) management/organization. For each competency, specific skills were identified. An edited version of the competencies and skills served as the basis of a Delphi Questionnaire, which was mailed to 20 nationally recognized experts in the field, asking for a critical response to verify and/or supplement the list of competencies and skills. There was general agreement among the 12 respondents concerning the designation of most of the skills as "essential," "desirable," or "useful," and majority agreement about the rank order of the generic competencies. Based on panel recommendations and questionnaire responses, a list of "teachable" skills and competencies were developed, representing the elements that must be included in a training design for ABE instructors.

Province of British Columbia Ministry of Education, DACUM.1. Introduction to DACUM, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 12p.

The first in a series of four books on the DACUM process. Looks at principles and procedures, DACUM's history and present standing, and gives a list of certain industries already covered by the process.

Province of British Columbia Ministry of Education, DACUM.2. The DACUM Workshop, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 10p.
The second in a series of four books on the DACUM process. Explains what a DACUM workshop is, the reasons for having one and who participates. Defines the roles of participants, where workshops are held, what the agenda consists of and the next step to take when the workshop is completed.

Province of British Columbia Ministry of Education, DACUM.3. From skill profile to objectives, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 6p.
The third in a series of four books on the DACUM process. Looks at analysing the skill profile and setting objectives and adds a note on terminology regarding the word "objectives" to avoid confusion over learning, performance, terminal, instructional, enabling and behavioural objectives.

Province of British Columbia Ministry of Education, DACUM.4. From objectives to instruction, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 14p.
The fourth of a series of four books on the DACUM process. Looks at analysing the objectives, selecting instructional techniques, choosing instructional resources, evaluation, how to instruct adults and provincial resources (in British Columbia).

Shears, Arthur E, "Occupational analysis and training," Journal of European Industrial Training, v.9, n.1, 1985: 23-27.
Traces the growth of the DACUM process from occupational analysis, its relevence, where it has been used in Canada, and guidelines on conducting a DACUM workshop.

ED106479
Sinnett, William E, The application of DACUM in retraining and post-secondary curriculum development, (2nd ed.) Toronto, Ontario:Humber College of Applied Arts and Technology. RANDA Division, 1974. 245p.
Expansion and clarification of DACUM. Definition as process and product. Explanation of six sections of DACUM document.

The National Center for Research in Vocational Education, Preparing for high technology. Thirty steps to implementation, Columbus, Ohio: The National Center for Research in Vocational Education, 1983. 49p.
One of three documents that address the concerns of postsecondary planners related to technician training needs in high-technology areas. Gives guidelines on long-range planning, how to set up an advisory council, the "do's and dont's" of development, implementation, evaluation and refinement and a checklist of thirty necessary steps in programme design. A useful section on DACUM forms Appendix B.

Youngman, Michael Brendon et al. Analysing jobs. Farnborough, Hants, (U.K.): Gower, 1978.
An explanation of how to do a job analysis on complex occupations such as those of professional people (e.g. engineers). The authors have developed a methodology for the analysis of work which takes into account organisational structure on the one hand, and the attitudes which people bring to their work on the other; for the performance of individuals and enterprises is a function of the way in which they interact with each other and a function of the way in which the organisation couples with the open system which is variously called society, the economy or the market, and the history of innovation within the organisation. Most of the book is about the development of a method for this kind of systems analysis. Three chapters describe the technique, analysis of a case study, and its outcomes. Other chapters address the more general implications such as the extent to which the traditional education system may be imposing its values, status distinctions and stratifications on working organisations in the manufacturing sector. This book is described in the forward as innovative and challenging.

Zemke, Ron, "Goal setting is the first step in any performance program," Training, v.17, n.7, July 1980: A5- (2p).

Zepke, Nick, Occasional papers No.24: in pursuit of excellence. A personal view of vocational education in the United States, Lower Hutt: Tutor Training Unit for New Zealand Technical Institutes, 1985. 72p.
Concentrates on competency-based instruction, computer-assisted learning and ongoing professional development, but also covers the accountability of educators, vocational resources in America and equity issues. Contains a section on occupational analysis, (training needs analysis), and a subsection on the DACUM process. The final chapter relates the information to the New Zealand environment.

TRAINING NEEDS ANALYSIS
OTHER APPROACHES

Note:

Any training needs analysis approach can be used in conjunction with other approaches if desired. Many can be used as part of the Systems Approach, and some of them are described in references listed under that heading.

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"A step-by-step way to conduct worthwhile focus groups," Training, v.15, n.12, Dec 1978: 50-(2p).

Abella, Kay Tytler, Building successful training programs: a step-by-step guide, Reading, MA: Addison-Wesley, c.1986: 156p.
This book explains how to do an effective needs analysis; how to work with other training professionals in preparing program specifications and documenting the program design; how to chose materials and training techniques that fit the overall design and achieve the goals of the program; and how and when to secure the approval of program sponsors and line managers.

Albert, Michael, "Assessing cultural change needs," Training and Development Journal, USA, v.39, n.5, 1985: 94,97-98.
Following the model presented here, needs assessment can bring together training efforts and organization development. The model is a "culture needs analysis," to precede change in organizational culture. A case study is described where a large nationwide organization is changed into 23 separate businesses. In training the model can be used as an educational device to provide an understanding of what culture is, how it develops, and what are its effects.

ED275870
Anderson, Tony and Neil Jones, TAFE curriculum research: a review of group process methods, Payneham (Australia), TAFE National Centre for Research and Development, 1986: 182p.
The issue of how to react quickly to the educational needs arising from technological change has been deemed a central problem facing Technical and Further Education (TAFE) in Australia. Therefore, a national study examined various curriculum research methods that hold promise for

speeding up the curriculum research and development process. The first phase of the study consisted of a description and analysis of group process methods. The following methods were analyzed: the Nominal Group Technique, the Developing a Curriculum Process (DACUM), the critical incident technique, Force Field Analysis, and brainstorming. It was concluded that the Search Conference, Delphi and exploratory methods, and, to a lesser extent, the Nominal Group Technique hold promise for providing data for adapting curriculum to occupational structural change. DACUM, while a promising method of obtaining data in the cognitive domain, may need to be linked to other methods that are more sensitive to change when used as a curriculum research procedure on occupations undergoing structural change, the critical incident technique can be advantageous in curriculum research for short courses, and Force Field Analysis appears best suited for use as an adjunct to other group process methods. In addition to describing the research project and its findings, this report includes several chapters of practical guidelines on using and blending the various group process curriculum research methods. Appendixes include descriptions of some questionnaire methods used and a sample search conference, observational studies, and a DACUM chart. Four pages of references and figures and tables are included.

ED275871

Anderson, Tony and Neil Jones, The facilitation of curriculum research workshops in TAFE, Payneham (Australia) TAFE National Centre for Research and Development, 1986: 114p.

The processes entailed in facilitating or leading workshops or seminars for researching the curriculum in Technical and Further Education (TAFE) were examined by using a modified Delphi process, which was followed by a 2-day workshop. Participants in the study were all experienced curriculum development specialists with knowledge of one or more of the following group process methods: Search Conference, Nominal Group Technique, developing a Curriculum (DACUM) and its derivatives, and the Critical Incident Technique. The facilitator role was examined in terms of the value orientations (preferences) and social rules (guides for action) used by experienced TAFE facilitators/group leaders. The facilitator/group leadership process was shown to require complex interpersonal skills, including the ability to set clear directions in a nonauthoritarian manner, negotiate flexibly with group members, face and resolve conflicts, and motivate groups. A model of the general stages and steps through which curriculum research workshops progress and a guide to the selection of group process methods for curriculum research in vocational education were developed on the basis of these research findings. Appendices include instructions to the participants in the study workshop, a summary of the workshop examining the facilitator role, detailed results concerning facilitators' value orientations and social rules, and an example of personal constructs data. A four-page reference list and tables and a figure are included.

Annett, J et al, Task analysis, London, Dept. of Employment, c1971: 23p. (Dept. of Employment, Training information paper; no.6).
See also, Shepherd, A (1976).

Australian Institute of Training and Development, Analysing Training Needs, Lalor, Vic. Australian Institute of Training and Development, Training Needs Analysis and Evaluation Group, 1987: 6p.
Describes training needs analysis as a six step process: 1. recognition that a problem exists; 2. identification of the real problem and cause; 3. can the real problem best be solved by training? 4. examine occupational and individual needs; 5. is meeting the original need justified? 6. design the training programe. Each step is described briefly, and a case history is given as an example of the way in which the six step process is applied.

Becker, Stephen, "Analyzing organizational performance," Training, v.14, n.6, 1977: 19-20
Perhaps the most important job trainers can perform isn't training, but determining what training, if any, is required to help solve organizational problems. This article describes the whats, whys and hows of doing this.

Becker, Stephen, "How to write Training Solution Statements," Training, v.14, n.9 1977: 18- (2p).

Bernhard, Keith and Anthony DiPaolo, "Profiling and targeting training and development needs," Performance and Instruction, v.21, n.10, Dec. 1982: 12-14.
Describes the need for needs assessment integrated with the goals of the organisation, and criticizes reactive approaches (i.e. squeeky wheel/crisis approaches). A needs assessment is required to guide the investment of resources in training, equipment, materials and personnel. Describes 'START', a composite approach to training needs assessment. (START = Systematic Technique for Assessing Resources and Training/Development). The 5 phases of START are described.

Billington, G C, A survey of training requirements in the NZ Fishing Industry, Wellington. Fishing Industry Training Council, 1984: 108p.
Report on a survey conducted to determine whether current industry training is meeting the requirements and to assess attitudes to training among the members of the catching, processing and retail sectors who took part. The survey/interview method is used to gather information, which is analysed and presented as results with extensive use of charts and diagrams.

Birnbrauer, Herman and Lynn A Tyson, "How to analyze needs," Training and Development Journal, (USA) v.39, n.8, August 1985: 53-55.
A needs analysis determines whether a training program is really necessary. This article includes check lists: (a) the steps to be done in a needs analysis, and (b) the steps to be covered in the interviewing process. When needs have been correctly identified, companies can design a corrective action plan that is applicable, expedient, cost-effective, and provides the greatest return on investment.

Bledsoe, John, "When solving your own problems there are six pitfalls to avoid," Training, v.14, May 1977: 86 (1p).

Borinstein, Dennis I, "When training is not enough," Training and Development Journal, (USA), v.37, n.4, April 1983: 92,94.
The first step in finding out if a training program is necessary is to conduct a performance audit to determine whether the situation at hand is a knowledge or performance problem. Such an audit is described.

Bowman, Barbara, "Assessing your needs assessment," Training, v.24, n.1, January, 1987: 30-34.
Many training programmes are put in place without a needs assessment preceeding them. To avoid this, the training department should take a proactive role, rather than a reactive role, and do assessments before training programmes are requested, or problems referred. A proactive needs assessment is described, and warnings given about possible pitfalls.

Bowman, Barbara, "SINS of omission: the missing link in evaluation," Training, May, 1987: 45-48.
How to evaluate needs not met, classes not taught, and opportunities not realized. Link human resource development (HRD) to your organization's strategic plan. Produce a total program evaluation, based on a needs assessment. Fill in the gaps with informal sources of information.

Boydell, T H, A guide to the identification of training needs, London: British Association for Commercial and Industrial Education, 1976: 44p.
Concentrates more on establishing a need for training needs analysis and its definition than on the actual analysis process. Five approaches are described - the organisation development approach, welfare approach, administrative and political approach, but not in any detail. Appendices cover characteristics of training approaches, data-collection methods, and systematic training in ten steps.

Bradley, John, "How to interview for information," Training, v.20, n.4, April 1983: 59- (4p).

Brinkerhoff, Robert O, "Expanding needs analysis," Training and Development Journal, (USA) v.40, n.2, 1986: 64-65.
Re-defining the function of needs analysis can bring you closer to realizing organizational goals. Needs analysis viewed as a problem solving effort.

Broadwell, Martin M, "Determining training needs," Training, Nov. 1975: 8- (2p).

Broadwell, Martin M, Supervisor and on-the-job training, 2nd edition, Reading, Massachusetts: Addison-Wesley, 1975: 156p.
Two sections on job analysis as a preliminary requirement of training needs analysis, to find out what is involved in a job and whether employees tend to be able to do it without formal training. Has a section on training objectives and how to design them, and a section on how to evaluate the success of training measured against those objectives.

Buckley, R and J Caple, "The training audit," Journal of European Industrial Training, v.8, n.7, 1984:3-8.
Description of a model for examining the training system, called the training audit. The approach includes scrutinising the way in which training needs are assessed, the way training is designed and conducted, and the methods of validation and evaluation that are employed.

Celinski, D, "Systematic on-the-job training," Training and Development, (USA) v.5, n.7, 1986: 15-18.
The author describes his own experiences in introducing and operating systematic on-the-job training in two differing industrial organisations. On the basis of this he argues the superiority of this training over non-systematic training in efficiency of time, correct application of knowledge and rate of learning. He categorises the occupations in which learners may successfully receive systematic training and the circumstances where it is applicable. An instructional technique is used and it is essential that training officers monitor its continued use to avoid slippage and regression to old established but less effective forms.

ED217140
Clatsop Community College, A model for retraining/training of business and industry employees, Astoria, Oregon: Clatsop Community College et al, 1981. 125p.
Model designed to assist Oregon community colleges to respond to training/retraining of employees in business and industry. Consists of a five step process in construction of a program; background research, agency involvement, occupational analysis, instructional analysis, marketing of program.

Culbertson, Katharine, and Mark Thompson, "An analysis of supervisory training needs," Training and Development Journal, (USA) v.34, n.2, Feb. 1980:58-60, 62.
First-line supervisors, second-level supervisors and middle managers were surveyed to identify the training needs of first-line supervisors. Highest ranks needed were those abilities relating to people, such as motivation, developing employees, communications, leadership and human relations. A one day program for supervisors was developed as a result of the survey.

Davies, Ivor K, "Task analysis for reliable human performance," Performance and Instruction Journal, v.20, March 1981: 8-31.

Dilauro, T J, "Training needs assessment: current practices and new directions," Public Personnel Management, v.8, n.6, 1979:350-359.

Division of Occupational Analysis, A guide to job analysis: a "how-to" publication for occupational analysis, Menomonie, Wis., United States Employment Service, Employment and Training Administration, U.S. Department of Labour, 1982: v, 488p.

This is a revised and expanded version of the 'Handbook for Analyzing Jobs (1972)' based on experience gained in using that handbook. It is divided into three sections. The first covers definitions, methodology and applications. The second describes the job analysis components of Work Performed and Work Characteristics. The third is devoted to job analysis forms and procedures and their use in the United States Employment Service. Included is a chapter on writing job descriptions based on job analyses.

Dowling, John R and Robert P Drolet, Developing and administering an industrial training program, New York: Van-Nostrand-Reinhold, 1979. 200p.

Dreilinger, Craig, Richard McElheny, Bruce Robinson and Dan Rice, "Beyond the myth of leadership-style training - Planned organisational change," Training and Development Journal, (USA), v.36, n.10, Oct. 1982: 70-74.

A description of the results of a needs assessment which used a form of constraints analysis. Organisational practices act as constraints on performance.

Duncan, Keith D and Chris J Kelly, Task analysis, learning and the nature of transfer, London: Training Division, Manpower Services Commission, 1983. 29p.

Examines ideas behind "grouping of skills". Defines "skills transfer" and differentiates between it and task analysis. Transfer can be divided into two groups - transfer of components from one task to another, and the integration of component skills into a new higher order skill. The task analysis approach used is "hierarchical task analysis". Examples of this in the form of skills checklists are included.

Easterby-Smith, Mark, "How to use repertory grids in HRD," Journal of Industrial Training, v.4, n.2, 1980: whole issue, 32p.

Indicates the potential for the repertory grid technique in human resources development and training, while providing sufficient background information about underlying assumptions, design alternatives, analysis and interpretation to enable the reader to use the technique in his or her own organisation. However, it should not be used lightly; the technique is complex, and because of the depth of investigation, if mishandled it can be harmful to individuals and organizations. Those wishing to use it in novel ways should not be discouraged, but they would be advised to seek out the advice of others more experienced in its use beforehand. An important principle is that they should not experiment with innovations on others until they have tested them on themselves and their friends. If they have difficulty completing them, or cannot understand the results from their own grids, the data are unlikely to have any more meaning when they are obtained from other people.

ED238884

Federal Bureau of Investigation, State and Local Law Enforcement Training Needs in the United States, Vol. I: Executive Report, FBI, Quantico, VA, Oct 1983: 44p.

Report of a long-term comprehensive analysis of state and local law enforcement training needs throughout the United States. The analysis was undertaken by the Institutional Research and Development Unit, Training Division, of the Federal Bureau of Investigation. A study was developed to (1) determine the type and extent of any state and local law enforcement training needs as perceived within their individual organizational missions and environments; (2) identify any differences in the nature of the training needs at different demographic levels; (3) provide training needs information which would facilitate the development of programs. Questionnaires were mailed out, and, in the analysis of the findings, basic police problems and skill areas were given high priority by law enforcement agencies. Needs given high priority by some respondents were given low priority by others. Includes an introduction, a review of the literature, discussion of methodology, findings and conclusions as well as a list of references.

ED238885

Federal Bureau of Investigation, State and Local Enforcement Training Needs in the United States, Vol II: Technical Report, FBI, Quantico, VA, Oct 1983: 127p.

Report of a long-term comprehensive analysis of state and local law enforcement training needs throughout the United States. It was undertaken by the Training Division of the Institutional Research and Development Unit of the Federal Bureau of Investigation. A study was developed to (1) determine the type and extent of any state and local law enforcement training needs as perceived with their individual organizational missions and environments; (2) identify any differences in the nature of the training needs of the various demographic levels; (3) provide training needs information which would facilitate the design of any Federal Law Enforcement training programs developed to meet state and local law enforcement agencies. This document, a technical report of the study, includes an introduction, review of the literature, detailed disccussion of methodology, report findings and conclusions, a list of references, 13 tables and 6 figures. Also included are appendices supplying survey materials, the follow-up letter, and rank order listing for 12 activities.

ED232062

Finch, Curtis R, Review and synthesis of research in trade and industrial education, 3rd edition, Information series No.260, Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education, 1983. 60p.

Third edition of review and synthesis of trade and industrial (T&I) education research, mainly studies from 1977 to 1982, taken from ERIC et al. Aspects covered: philosophy and scope, student characteristics and needs, curriculum development, instruction and learning, teacher education, administration and evaluation.

ED178696

Finch, Curtis R and John R Crunkilton, Review and critique of strategies for determining career education curriculum content, Blacksburg, Virginia: Virginia Polytechnic Institute/State University, 1979. 13p.
Consideration and comparison of major curriculum development methods such as theoretical base, philosophical base, introspection, function approach, task analysis, Delphi approach, critical incident technique and DACUM. Includes a summary of what each technique involves.

Flanagan, John C, "The critical incident technique," Psychological Bulletin, v.51, July 1954: 327-358. Also reprinted in: Zemke, Ron and Thomas Kramlinger, Figuring things out: a trainer's guide to needs and task analysis, Reading Massachusetts, Addison-Wesley, 1982 p.277-317.
This is an article by the founding father of the critical incident technique. The technique grew out of work done by the Aviation Psychology Programme of the Army Air Forces in World War II. The introduction contains several examples of the use of the critical incident technique. Then there is a step-by-step explanation of the procedure, followed by a brief discussion of each type of application. These include (a) measures of typical performance (criteria); (b) measures of proficiency (standard samples); (c) training; (d) selection and classification; (e) job design and purification; (f) operating procedures; (g) equipment design; (h) motivation and leadership (attitudes); (i) counselling psychotherapy.

Food, Drink and Tobacco Industry Training Board, Assessing your company's training needs, Croydon, (UK): Food, Drink and Tobacco Industry Training Board, 1972. 40p.
First in a series on systematic training; this one covers examination of a company's plans and problems and assessing overall training needs. Uses fourteen key investigation areas; planning, organisation, performance, delegation, recruitment and labour turnover, careers and pay, sales, costs and finance, methods stock control, quality and hygiene, industrial relations, the law and safety.

Food, Drink and Tobacco Industry Training Board, How to produce a simple modular training scheme: A guide for managers and training officers, Gloucester, (UK): Food, Drink and Tobacco Industry Training Board, 1977. 16p.
Defines the modular approach, lists requirements and advantages and goes through the training scheme development procedure. Identifies five methods of job analysis; the Training Within Industry, (TWI) method, medium-depth task analysis, complex skills analysis, faults analysis and social skills analysis.

Food, Drink and Tobacco Industry Training Board, How to use job analysis for profitable training, Croydon, (UK): Food, Drink and Tobacco Industry Training Board, 1972. 31p.
The second in a series on systematic training; this one covers job analysis. It is intended to be used after the first book. "Assessing your company's training needs" to identify what specific jobs entail,

how they relate to other jobs and organisational objectives. Looks at job description, job breakdown methods, such as medium-depth task analysis, complex skills analysis and training within industry, (TWI), trainees' needs and the manager's role.

Gael, Sidney, Job analysis: a guide to assessing work activities, San Francisco, Jossey Boss, 1983.

Georgenson, Dave and Edward Del Gaizo, "Maximise the return on your training investment through needs analysis," Training and Development Journal, (USA), v.38, n.8, Aug. 1984:42-47.
Six steps to successful needs and analysis are (1) collect information about the organisation, (2) identify potential training opportunities, (3) conduct a performance audit, (4) select and test content areas, (5) determine the required skills, knowledge and abilities, and (6) verify this information against the organisations issues and goals.

Ghorpade, Jai, Job analysis: a handbook for the human resource director, Englewood Cliffs, N.J., Prentice Hall, 1987.

Gibbons, A S, "Pre-development analysis in military training," NSPI Journal, v.19, n.1, Feb. 1980:34-42.
Addresses the problems of conducting pre-development analysis in the military from a training developer's point of view, and discusses issues related to the basic questions of analysis and the rationale and method for performing it.

Gilbert, Thomas F, "A question of performance Part I: The PROBE model," Training and Development Journal, (USA), v.36, n.9, September 1982: 20-22, 24-30.
The PROBE model is described by the author as a kind of "automated question generator" and "answer sifter." PROBE (profiling behavior) consists of several dozen questions that can be asked about any accomplishment of any job in any work situation. The answers help formulate a profile of behavior showing the major barriers to exemplary performance. The barriers are identified only, PROBE does not provide cures, it does help us focus on problems. The author has 3 objectives in this article: (1) To sell you on performance analysis and question models; (2) To give you a little practice in using PROBE and (3) To provide you with the rudiments of the concept of PROBE, and its theory. Part I of an article, the Part II appears in Training and Development Journal, (USA), v.36, n.10, 1982: 85-89.

Gilbert, Thomas F, "A question of performance Part II: Applying the PROBE model," Training and Development Journal, (USA), v.36, n.10, 1982: 85-89.
Part II of article in v.36, n.9, 1982: 21-22, 24-30. Describes case study using the PROBE model, and provides tips for using the model.

Gilbert, Thomas F, "Measuring the potential for performance improvement," Training, v.15, n.12, Dec. 1978: 25- (4p).

Gilbert, Thomas F, "Praxeonomy: a systematic approach to identifying training needs," Management of Personnel Quarterly, v.6, n.3, 1967:20-33.
Provides a basis for deciding how to limit training objectives to a practical program of instruction. Establishes four rules of limitation:
Rule One: D=M-1; Deficiency = Mastery - Initial Repertory.
Rule Two: Accomplishment versus Acquirement.
Rule Three: Knowledge and Execution.
Rule Four: Establish Economic Priorities.
Mastery, as the term is used here, not only includes mastery of each task in a list of tasks, but also mastery of the order in which the tasks are to be performed. Causes of performance deficiency are described, not all of them pertain to training.

Green, Samuel B and Thomas Stutzman, "An evaluation of methods to select respondents to structured job-analysis questionnaires," Personnel Psychology, v.39, n.3 Autumn 1986 543-46.
Evaluated methods for selecting respondents who would respond accurately to items on a job-analysis questionnaire. One method involved obtaining from employees measures that assessed background, performance, and organizational information. A second method involved collecting job-analysis data from all potential job analysis respondents and selecting a subsample from them.

Gropper, George L and Paul A Ross, "Instructional design," in: Training and development handbook: a guide to Human Resource Development, 3rd edition, edited by Robert L Craig, New York, McGraw-Hill, 1987: 195-216.
Gives a short history of Instructional Design, a term that first appeared in the 1960s. Early Instructional Design approaches rested on learning principles from behavioral psychology. Subsequent Instructional Design approaches have added different analytical approaches from psychology (some behavioral, some cognitive and some a mixture of the two). They all equate analyzed learning requirements with "conditions" and training approaches with "treatments." All current Instructional Design models consist of formal rules for matching these conditions and treatments.
The second part of this article is longer. It gives details about the tasks in Instructional design. Each task has its distinctive purpose. Each employs different methods, and each produces distinctive results. The tasks include "needs analysis," "task description," "task analysis," "sequencing," "stating objectives," "developing tests," "formulating instructional strategies," "developing materials," and "formative evaluation."

Habib, Waqar, "Problems in determining training needs in an organisation," Training and Development Journal, (USA), v.24, n.7, 1970:44-48.
Looks at problems associated with various survey approaches; organisational analysis, job analysis and manpower analysis, then moves on to problems with methodology or technique; interviewing, observation, data/records review and questionnaires.

Harless J, "An analysis of front end analysis," Improving Human Performance, v.2, 1973: 229-244.

Harless, Joe, "Front-end analysis," Training, March 1975: 27- (6p).
An interview with Joe Harless.

Harrison, Edward L, Paul H Pietri and Carl C Moore, "How to use nominal group technique to assess training needs," Training, v.20, n.3, March 1983: p30,32,34.
This method is called the Nominal Group Technique because it uses a group of people who "nominate" problems and issues that deserve attention, then several of the traditional needs assessment methods are combined. The Nominal Grouping Sequence is: (1) listing, (2) recording, (3) collating and (4) prioritizing.

Hiebert, Murray B and W Norman Smallwood, "Now for a completely different look at needs analysis," Training and Development Journal, (USA), May 1987: 75-79.
This article points to situations in which the objectivist approach to training needs analysis fails. This occurs when the environment is dynamic, or when the training cannot be described in behaviorally subdivided terms. The interpretive approach is recommended when there are multiple definitions of the situation. The interpretive approach is described and 3 tables set out the differences between the objectives approach and the interpretive approach.

Hilowitz, Janet, Tracer studies as tools for identifying training needs: an evaluation, Geneva, ILO Training policies discussion paper, 1982: 77p.

Horton, George R "Dick", "Training needs assessment: a case study," Performance and Instruction, v.23, n.2, March 1984: 5-8.
Presents case study findings of a training needs assessment undertaken to find out the training implications of implementing a system of quality assurance at the Fridley Minnesota plant of Onan Corporation which manufactures electric generator sets and switch gear.

Huber, V L, "Training and development: not always the best medicine," Personnel, v.62, n.1, 1985:

ED213827

Hull Daniel M et al, Development of safety and health instructional materials. Final report, Waco, Texas:Center for Occupational Research and Development Inc. 1982. 53p.
Design and development of pre-employment vocational training curricula incorporating safety and health instruction. Identification of training needs and specific content areas. Development, evaluation and revision of fifty instructional modules, and seven instructor resource guides for selection and implementation of training in specific safety and health areas.

Inderlied, S D and D L Bates, "A practical approach to determining training solvable problems," Personnel Journal, v.59, n.2, Feb 1980:121-125.
Discusses a three-step model for diagnosing supervisory training needs. Major steps included in the model are (1) data collection (divided into two phases) (2) diagnosis, and (3) separating the problems.

Kaman, Vicki S, "Why assessment interviews are worth it," Training and Development Journal, (USA), v.40, n.5, May 1986: 108-110.
This article concentrates on the interview part of a needs assessment. It starts with a discussion on the advantages of interviews, and continues with details on how to interview effectively.

Kaufman, Roger, "A needs assessment primer," Training, v.41, n.1, Oct. 1987: 78-83.
A ten-step approach to help beginners with this necessary, yet often dreaded task.

Kaufman, Roger and Donald L Mitchell, "Risk and training," Performance and Instruction, v.21, n.2, Mar. 1982:4-7.
Suggests that trainers take innovative approaches to training clients who work in high-risk jobs such as the military and recommends that external needs assessment, front end analysis, and task analysis be used to establish training goals and objectives. Nine references are listed.

Kenney, John P and Eugene L Donnelly, Manpower training and development, London: Harrap, 1972. 222p. 2nd ed. 1979. 288p.
Contains a good section on training needs analysis, concentrating on three main approaches; the comprehensive, the key task and the problem-centred analysis. Approaches are broken down into methods, (such as self-observation), and techniques, (such as faults analysis). The chapter on instructional design and program evaluation and briefly describes four evaluation methods; context, input, reaction and outcome evaluation.

Kenney, John and Margaret Reid, Training interventions, London, Institute of Personnel Management, 1986: xiv 354p.
This book is based on and replaces the Institute of Personnel Management's publication Manpower Training and Development, (1972). Beginning with a consideration of the nature of training and its organizational role, it continues with the assessment of organization and individual needs, to the choice of strategy and the planning and evaluation of interventions. In the final chapter national interventions are considered as they affect both the organization and the individual.

Kirkpatrick, Donald L, A practical guide for supervisory training and development, Reading, Massachusetts: Addison-Wesley, 1971: 182p.
Practical help for line managers as well as personnel and training directors with applications in industry, business, hospitals and government. Covers reasons and responsibility for training, needs analysis, methods and evaluation, program design and trainee selection. Case examples of effective programs are included.

Kirkpatrick, D L, "Determining training needs: four simple and effective approaches," Training and Development Journal, (USA), v.31, n.2, 1977: 22-25.

Kirkpatrick, D L, "How to plan and implement a supervisory training program," Training and Development Journal, (USA), v.32, nos. 4-6,8,9, 1978.

Knowles, Malcolm S, The modern practice of adult education: from pedagogy to andragogy, Chicago, Assocation Press, Follet, 1980: 400p.
See especially chapter 6: "Assessing Needs and Interests in Program Planning," chapter 7: "Defining Purposes and Objectives," and chapter 10: "Evaluating Comprehensive Programs. Chapter 2: "What is Modern Practice?" chapter 3: "What is the Role and Mission of the Adult Educator," and chapter 4: "What is Andragogy?" Together these chapters give the theoretical background to the current changes in vocational education.

Laan, Katrina and Alan Robertson, Manpower and training needs survey, Auckland: Institutional Training Advisory Committee, 1983. 60p.
An extensive survey of training needs for caring and housekeeping staff employed in New Zealand institutions - hospitals, education establishments, hostels, rest and convalescent homes, religious communities and prisons. The survey/interview method is used to gather information. Collation of this information forms the results of the survey. A copy of the interview schedule used is included.

Laird, Dugan, Approaches to training and development, 2nd edition Reading, Massachusetts: Addison-Wesley, 1985.

Lampe, Steven, "Getting the most out of needs assessment," Training, v.23, n.10, Oct. 1986: 101-104.
Lists 16 kinds of useful information critical to the success of training. Describes 5 categories of people who can act as information sources: subject matter experts (SMEs) intended trainees, managers of those trainees, former trainees, and clients/users. Explains which type of information can be obtained from which category of informants.

Lawrie, J W and Clayton W Boringer, "Training needs assessment and training program evaluation," Training and Development Journal, (USA) Nov. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 291-294.
A training planning process with measurement at both input and output stages.

Leach, John J, "Organization needs analysis: a new methodology," Training and Development Journal, (USA), v.33, n.9, Sept. 1979: 66-69.
Training needs analysis can miss the mark unless there is some insight (and data) into the firm's evolution and its new requirements. Organisation shifts in direction and purpose may not be known to trainers, and may even not be known to the firm's leadership. This "incubation" period can last for several years, while trainers train for yesterday's needs. In an earlier article (see Leach Oct 1977) the writer developed the "Career of the Organization" exercise. It quickly became evident that the exercise was tapping into needs analysis areas relating to both individual and organization development. In this article the usefulness of the exercise finding to the training function is discussed.

Leach, J, "The career of the organization," The Personnel Administrator, Oct, 1977:
This article forms the basis for Leach's 1979 article on "Organization needs analysis: a new methodology," see above. This article is not about needs assessment, but it does introduce concepts that are a useful addition to the human resource planner's tools for front end analysis and strategy planning.

ED205724
Lund, Brishkai and Sandy McGechaen, C E programmer's manual, Vancouver, British Colombia University, Centre for Continuing Education, 1981. 155p.
Reference guide for continuing education planners providing basic information on DACUM and delivering such programs. Outline of seven areas of competence for programmers: assessment of community needs, planning of courses and programs, promotion and marketing of courses and programs, management of personnel, practice of communication skills and evaluation of conduct.

McCormick, Ernest J and Daniel R Ilgen, Industrial psychology, 7th ed. New Jersey: Prentice-Hall, 1980. 464p.
(See also 7th ed. Sydney: Allen & Unwin, 1981).

McCormick, Ernest James, Job analysis: methods and applications, New York: AMACOM, 1979.
A comprehensive study of human work, (defined as job analysis). Covers various methods of job analysis, including the more recently developed systematic or structured methods. It also includes a discussion on the use of data gained, in relation to practical objectives.

McDermott, Frederick M, "Try brainstorming - a quick route to job analysis," Training, v.19, n. . March 1982: 38- (3p).

McKenna, Douglas D et al, "How to build a training structure that won't keep burning down," Training, v.21, n.9, Sept. 1984: 77-83.

McNicol, Bill, "How chemical analysts broke down the job," Transition, May 1986: 22-24.
A case study report of the way in which the Chemical Industries Association (CIA) arrived at a Standards-based programme for training. The needs analysis technique used was focus and concensus groups. They arrived at a task analysis described in sufficiently general terms to serve as a skeleton for any job in the industry.

Mallory, W J, "A task-analytic approach to specifying tech training needs," Training and Development Journal, (USA), v.36, n.9, Sep. 1982:66-68, 70-73.
This article explains a performance-oriented approach to outlining technical training needs. The performance improvement cycle is discussed and the three main activities in that cycle are described. They include need detection, task identification, and collection of task performance data.

Markowitz, Jerrold, "Four Methods of Job Analysis," Training and Development Journal, (USA), v.35, Sept. 1981: 112-118.
The four methods discussed are observation, interview, jury of experts and questionnaires. There is no one best method. The quality of the method depends on the expertise of the person using it, and a variety of other factors; such as organizational philosophy, needs, goals, money, personnel and time factors.

Markowitz, Jerrold, "Managing the Job Analysis Process," Training and Development Journal, (USA), August, 1987: 64-66.
Describes the method used to analyze jobs by the U.S. Coast Guard. A panel of experts generates a list of job tasks. A questionnaire was also used.

Merrill, P F, "Task analysis: an information processing approach," NSPI Journal, v.15, n.2, 1976: 7-11.

Michalak, Donald F and Edwin G Yager, Making the training process work: A practical guide to better training programs, New York: Harper & Row, 1979. 152p.
Covers training responsibility, needs and task analysis, training objectives program design, conducting the training and evaluating it. The needs analysis section uses a hybrid model which distinguishes "can't do" problems, (lack of skill/knowledge), from "don't do" problems, (motivational). Six other techniques are also outlined. Three evaluation methods are used; control group, placebo training and random sampling.

Mitchel, Elizabeth J and Albert C Hyde, "Training demand assessment: three case studies in planning training programs," Public Personnel Management, Nov-Dec 1979: 361-373.

Moore, M L and P Dutton, "Training needs analysis review and critique," Academy of Management Review, July 1978: 532-545.
This literature review reconsiders needs analysis data resources, measures, and research techniques in order to assess the state of the art and gaps in theory and practice. A critique of current theory and state of the art is provided. Process issues and recommendations are noted.

Nadler, Leonard, Designing training programs: the critical events model, Reading, Massachusetts: Addison-Wesley, 1982.
Presents the critical events model and discusses several other models. The CEM is an open model that continuously involves managers and supervisors in the design process. It and the book, moves through the "events" of identifying the organisation's needs, specifying job performance, identifying learner needs, determining objectives, building a curriculum, selecting a training method, obtaining training resources, conducting the training and finally, evaluating it.

Nadler, Leonard, "Using critical events to develop training programmes," Industrial Training International, April, 1971: 53-56.

National Tourism Industry Training Committee, Manual of occupational analysis, Australia: National Tourism Industry Training Committee, 1984. 100p.
A training needs analysis manual for the tourism industry in Australia using the task inventory method. Information on writing and organising the task inventory, and examples in the form of lists of tasks needed within the industry, as well as a few other jobs such as waiter, driller etc...

"Needs analysis: whose problem is this?", Training, v.23, n.9, Sept. 1986: 12,14.
Part of an editorial, this section describes initial responses to requests for needs analysis. The question is who is it that needs the training? "When a manager comes to us and points to a subordinate who

is 'not performing up to standard,' we operate on the premise that at least three of the fingers on the accusing hand should be pointed in the direction of the manager."

ED216205

Nelson, Orville, and Harold Halfin, Emerging skills: implications for voc. ed. information series No. 234, Columbus, Ohio: National Center for Research in Vocational Education, 1982. 43p.
Importance of keeping up to date with technology in the U.S. Need to change skill requirements and develop new ones for new jobs. Methods for identifying new skills include: advisory committees, creative insight, DACUM, the Delphi process, evaluation studies, industrial work experience, labor market surveys, conferences and task analysis. Need for vocational programs to become more flexible.

New Zealand Department of Labour, Industrial Training Service, Identifying training needs - a memo to the manager, New Zealand Department of Labour, 1983. 17p.
Brief description of three types of training needs: organisational training needs; occupational training needs; and individual training needs.

New Zealand Department of Labour, Industrial Training Service, Planning and evaluating a training programme. New Zealand Department of Labour, 1983. 19p.

New Zealand Department of Labour, Industrial Training Service, Training needs analysis: a questionnaire for management, New Zealand Department of Labour, 1982. 32p.

Newstrom, J W and J M Lilyquist, "Selecting training needs analysis methods," Training and Development Journal, (USA), v.33, 1979: 52-56.

Olivas, Louis, "Designing and conducting a training needs analysis: putting the horse before the cart," Journal of Management Development, v.2, n.3, 1983: 19-41.
Data needs to be collected to (1) Define the need, (2) Identify the Solution, (3) Specify those needing training, and (4) Provide the planning details for delivery of training. Criteria for selecting the methodology are given. The data is analyzed, verified and then processed to set priorities. Needs assessment is not a simple process, it requires data from many different sources, gathered in many different ways. Trade-offs must be made between the time and resources available, and the scope and depth of the needs analysis. It is because of the numerous decisions that must be made regarding trade-offs that the model for needs assessment repeatedly emphasises the importance of examining underlying assumptions.

Paper and Paper Products Industry Training Board, Assessing training needs and developing a training plan, Potters Bar, Hertfordshire: Paper and Paper Products Industry Training Board, 1979. 17p.

Paterson, T T, Job evaluation, Vol. 1: a new method, London: Business Books, 1972: 209p.
Surveys seven methods of job evaluation. Describes a new method - work analysis, which has application in training and selection of staff.

Paterson, T T, Job evaluation, Vol. 2: a manual for the Paterson method, London: Business Books, 1972. 208p.
A practical manual showing how to put the Paterson method (or work analysis method) into practice. This method, and seven others, are described in Vol. 1. Gives a number of sample task analysis forms for jobs such as wheel tester, lathe operator and diamond driller.

Patrick, J and A K Moore, "Development and reliability of a job analysis technique," Journal of Occupational Psychology, v.58, 1985:149-158.
Examines reliability in the development of a modified British version of the Position Analysis Questionnaire, (PAQ), known as the Job Structure Profile (JSP).

Patrick, J, P Spurgeon and A Shepherd, A guide to task analysis: applications of hierarchical methods, Birmingham, Occupational Services.
Shows how two linked techniques Hierarchical Task Analysis (HTA) and Overview Task Analysis (OTA) may be used not only for training but also in a range of additional applications. Provides practitioners with guidelines on how to carry out task analysis. The term HTA refers to a task analysis in which a job or area of work is broken down into a hierarchical set of tasks, sub-tasks and plans. Sub-tasks are exhaustively specified and each task is described in terms of its objective. The analysis proceeds on more than one level of analysis. OTA is a modified version of HTA. The strength of HTA is in defining what needs to be trained given a specific set of trainees. OTA is a more general technique providing a descriptive set of tasks across an area of work. One essential difference between HTA and OTA is in terms of the stopping rule governing the level of description achieved by each technique.

Poulet, Roger, "Training process effectiveness," Industrial and Commercial Training, v.18, n.1, Jan/Feb 1986: 10-13.
Examples given are in management training, but the points made are relevant to other types of training as well. The three main elements of effectiveness are (1) accurate identification of training needs, (2) accurate selection of participants, and (3) appropriate course content.

Poulter, Bruce, Training and development, Sydney: CCH Australia, 1982. 166p.
Has a comprehensive section on training needs analysis and training objectives, giving types of training needs, types of needs analysis and

how to carry out needs assessment. A sample training needs survey is included. Preparing and setting training and behavioural objectives is discussed and set out in chart form.

ED208176

Prien, Erich P, Symposium comments and a perspective on job analysis, Paper presented at the Annual Meeting of the American Psychological Association, (Los Angeles, CA), 1981. 14p.
Perspective on job analysis and related comments on research at a symposium. Discusses two questions, what should be done? and how well was it done? - the Stage I and II evaluation operations.

Prien, Erich P, Irwin L Goldstein, and William H Macey, "Multidomain Job Analysis: Procedures and Applications," Training and Development Journal, (USA), August 1987, 68-72.
Job analysis can seem difficult because it is such a broad effort. The key to success lies in cutting it down to size, and a multidomain approach helps you do just that. Use five steps. First identify the target job or job family by researching job descriptions, work products, job forms and the like; interview supervisors, and watch incumbents perform the job. 2nd develop task statements, 3rd develop skill statements. Once you have gathered all appropriate task and skill statements, review, evaluate and consolidate the two inventories. Finally, select a job analysis operation.

Pyle, Bob, "Evaluating white-collar technical training requirements," Training and Development Journal, (USA), v.39, n.8, August 1985: 56-58.
Even trainers with technical backgrounds can expect problems if they apply textbook approaches to analyzing white-collar technical training needs.

Rabey, Gordon P, Training: a practical approach to job training, Wellington, NZ: Paige Productions, 1980.
Defines the function of training, describes its operations from training needs analysis through costs and budgets, how people learn, evaluation of training, to retraining of personnel and the training of training officers.

Rae, Leslie, How to measure training effectiveness, Aldershot, Hants, Gower 1986: x, 151p.
This book sets out to suggest ways in which any form of training can be assessed for effectiveness and value. It covers the whole training process from the selection and planning of a training event through to the validation and testing of its outcome in both the short and the long term. The author summarizes the various approaches and provides practical instruments based on his own experience.

Rath, Gustave and Karen Stoyanoff, "The Delphi Technique," in: Ulschak, F L, Human Resource Development: the theory and practice of needs assessment, Reston, Va. Reston Publishing, 1983: 111-131.

Ribler, Ronald I, Training Development Guide, Reston, Virginia, Reston Publishing, 1983: 215p.
After a short chapter on learning theories, this book is divided into chapters about the ten different tasks that need to be done when designing training. These include (1) needs analysis to identify training development requirements; (2) developing course objectives; (3) developing enabling objectives; (4) developing course criterion test items; (5) developing demonstration, practice and test items; (6) defining strategy; (7) preparing instructor's and trainees' materials; (8) developing instructor's or administrator's guide; (9) trying out the training package and (10) analyzing the results and revising. After this, the following subjects are covered: workshops and conferences; administration guide for self-instructional training; lesson plans; other training materials; computers in training; estimating costs; training trainers; evaluation of training; alternatives to training, and writing styles. Alternatives include analyzing causes for performance deficiencies, improving system design, training to treat symptoms, personnel selection and examining the validity of objectives.

Robinson, Kenneth R, A handbook of training management, 2nd edition, London, Kogan Page, 1985: 266p.
This book covers training objectives; training needs analysis; planning the overall programme; aspects of the training process including learning and behaviour as well as the methods and techniques of training. Also covered are the evaluation and validation techniques; training resources; and influences on the training function. Some areas of recent development in training are mentioned.

Rogoff, R L, "The training wheel: a simple model for instructional design," Training, v.21, n.4, 1984: 63-64.

Rogoff, Rosalind L, The Training Wheel: a simple model for instructional design, New York, John Wiley and Sons, 1987: 151p.
The book that grew out of the idea expressed in the 1984 article. This book proposes a middle ground where instructural designers (who want to fit everything into an ISD model) and subject matter experts (who want to do a knowledge dump for every class) can meet and reconcile their different approaches to training. The result - a clear-cut four phase instructional design model that includes gathering data, analyzing data, developing solutions and taking action.

Rothwell, William J, "How to conduct a real performance audit," Training, v.21, n.6, June 1984: 45, 47-49.

R Z, "The Pareto Principle: why things aren't fair," Training, v.23, n.7, July 1986: 59-60.
Stated in English - as opposed to maths, Italian or French - Pareto's Law says that in any series of elements or variables, a small fraction of the elements count for most of the effect (the 80/20 rule). The trouble comes in figuring out which 20% gives you the 80%. Pareto

diagrams can help. They can be simple bar charts. The article is not directly about solving performance problems, but could be a relevant tool.

Salinger, Ruth D, "Why training fails," Training, Feb 1975: 28- (6p).

ED254565

Schlenker, Richard M, A curriculum development oriented partial task analysis bibliography, 1985. 120p.
Defines task analysis as the process of identifying all things that individuals must accomplish to satisfactorily complete an activity or course of instruction. Lists task analysis documents related to curriculum or training program development taken from five sources. (All training needs analysis is not the focus of this bibliography, it follows on from the process of task analysis).

Scott, Dow and Diana Deadrick, "The nominal group technique: applications for training needs assessment," Training and Development Journal, (USA), v.36, n.6, 1982:78-83.

Shepherd, A, "An improved tabular format for task analysis," Journal of Occupational Psychology, v.49, 1976: 93-104.
One reason for Annett et al's technique of hierarchical task analysis not being more widely adopted is that would-be analysts have failed to understand the concept of 'redescription'. It is argued that the original tabular format proposed for recording such analyses has not facilitated this understanding. For example, the table does not enable easy examination of the redescription of a superordinate operation, nor is there a clear separation between the basic task analysis and hypotheses proposed to ensure operator competence. A revised format is proposed to overcome these objections and is illustrated using a complex planning task.

Singer, E J and J Ramsden, Practical approach to skills analysis, London: McGraw-Hill, 1969.

ED198266

Skinner, Gilbert H, Training needs assessment for criminal justice agencies, Michigan State University, 1980. 36p.
Summary of current thinking on training needs analysis for criminal justice. Covers purpose of needs assessment, performance, alternatives to training, needs determination methods, concepts of needs analysis, data analysis and cost/benefit analysis.

Smith, Barry, Brian Delahaye and Peter Gates, "Some observations on TNA," Training and Development Journal, (USA), August 1986: 63-68.
Training Needs Analysis (TNA) is often not done or not done effectively. This article proposes a model to assist analysis called the TNA model. It includes (1) surveillance, (2) investigation and (3) analysis, and the data to be collected includes organisation data, operations data and person data.

Spitzer, Dean, "Remember these dos and don'ts of questionnaire design," Training, v.16, n.5, May 1979: 34- (4p).

Spitzer, Dean R, "Try Fault Tree Analysis, a step-by-step way to improve organization development," Training, v.17, n.2, 1980: 58, 64, 68-69.

Steadham, S V, "Learning to select a needs assessment strategy," Training and Development Journal, (USA), v.34, n.1, 1980: 56-61.

Stein, D S, "Designing performance-oriented training programs," Training and Development Journal, (USA), 1979:52.56.

Stewart, William J, "Determining first-line supervisory training needs," Training and Development Journal, (USA), v.24, n.4, 1970: 12-19.
Report of a study which surveyed the principal job tasks of a first-line supervisor. The participants were 717 supervisors representing 110 industrial organisations in Ohio.

Taggart, Robert, A fisherman's guide: an assessment of training and remediation strategies, W E Uphohn Institute for Employment Research, 1981.

Technical education and the world of work, edited by R A Pedder and R E Taylor, Wellington, N.Z., Employers Federation, c.1985. 32p.
A discussion paper by the New Zealand Employers Federation on the role and functions of the Technical Institutes, the Examining Authorities and Industry in the vocational education process. Includes brief comments on employer philosophy, the role of technical institutes and community colleges, the role and expectations of industry, training needs analysis, vocational education standards, qualifications, role and functions of examining authorities.

Technology transfer: A project guide for international HRD, edited by Agnes Reynolds, Boston, International Human Resources Development Corporation, 1984: 145p.
Defines Human Resources Development (HRD). Contains a section on program design for trainees from third world countries. Gives information on planning, needs assessment, setting objectives, design, implementation and evaluation. Computer based learning is also included. A section on training supervisors uses Leonard Nadler's Critical Events Model to construct a program. (See also Nadler, 1982).

"The great training robbery," Education and Training, v.27, n.6, June 1985, 161-162.
Brief notes on the necessity for front-end analysis (or needs analysis) which distinguish between "can't do" problems and "won't do" problems. Brief description of a case study in which there was quality improvement in engineers' reports.

The job analysis handbook for business, industry, and government, edited by Sidney Gael, New York, Wiley, 1987.

The training and development sourcebook, edited by Lloyd Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1983: 381p.
A handbook which deals with designing, implementing and evaluating training and development, to improve individual and organisational performance. Includes readings, checklists, questionnaires, models, and methods for analysis that have proved useful in consulting and teaching. Contains a thorough section on training needs analysis and outlines five different methods.

Thomas, Edwin A, "Training needs identification: a turning point," Performance and Instruction, v.21, n.8, Oct 1982: p6-8.
Describes an approach to training needs identification that is directly tied to changing organizational events. Recommends questions to be asked of those whose positions in the organization make them subject matter experts. A table showing who should be asked what question is included.

Tobin, Helen M, Pat S Yoder Wise, and Peggy K Hull, The Process of Staff Development: Components for Change, 2nd edition, St Louis, C V Mosby, 1979: 248p.
Aimed at trainers and administrators of nursing services, this book covers organization and administration, roles and relationships, budgets, philosophy purpose and goals, adult learning, changing behavior, needs assessment, designing and implementing the program, strategies to facilitate learning, evaluation and future directions.

Training and development handbook: a guide to Human Resource Development, edited by Robert L Craig 3rd ed., New York, McGraw-Hill, 1987: 878p.
A book of 49 readings by different authors. Covers the training and development function, program design and development, media and methods of instruction, training applications, and resources. Some articles listed separately.

ED209561
Training in the Human Services Vol. II: Papers presented at the fall conference on training in the human services, edited by Richard L Edwards and Thomas D Morton. Atlanta, Georgia, Tennessee University, Knoxville, Oct 16-18, 1978: 279p.
Needs assessment, program design, and evaluation are presented in a series of 12 papers for trainers, educators, and practitioners interested in training for human service practice. Needs assessment is discussed in terms of direct interpersonal approaches; indirect interpersonal approaches; and social indicator approaches. Weaknesses of needs assessment are identified and discussed in terms of lack of clear cut definitions, interpreting and weighting data collected, lack of well defined training competency hierarchies, and the difficulty of extracting useful information on the existing knowledge and sophistication within the target population. Included in this section

are two papers describing needs assessments undertaken in a mental health center and with service providers in gerontology. Program design is reviewed with specific attention paid to size, purpose, economy and the sociopolitical environment. Seven papers follow that report on large scale training programs, a program that utilizes Telecommunication Satellites, a state-wide inservice program for social workers, a rural rape crisis program, a community college-based program and a description on how to use information science in design. A background to the evaluation of training programs in human services is provided. Included in this section are three papers that address issues related to evaluation of training effectiveness.

ED201720

Training of trainers, edited by Claudette D Chmura, Washington: National Training and Development Service for State and Local Government, 1981, 116p.
Curriculum package for public sector trainers aimed at improving skills in the assessment of training needs, design and implementation of programmes, and evaluation of training programmes. Can be used for private study or as part of a 5 day workshop. Contains 4 leader's guides and 4 participants' sourcebooks.

"Training terms: needs analysis: a concept in search of content," Training, v.18, n. , 1981: 57- (2p).
Editorial comment.

"Training terms: the Delphi Technique,", Training, v.15, n.8, Aug. 1978: 8.

"Training today: an alternative to 'tell us where it hurts' needs analysis," Training, v.18, n.5, May 1981: 91.
Editorial comment.

Turner, B E, A survey into staff training needs in residential establishments, (Management, catering, housekeeping and non-specialist caring), Auckland: Institutional Training Advisory Committee, 1984. 153p.
An extensive survey of training needs using interview and questionnaire methods. Results are reported and the author gives his comments and opinions. A further survey is being conducted throughout New Zealand and a questionnaire form is included.

Turrell, M, Training analysis: a guide to recognising training needs, Plymouth Macdonald and Evans, 1980.

Ulschak, F L, Human Resource Development: the theory and practice of needs assessment, Reston, Va. Reston Publishing, 1983.
Part I covers the Training Cycle overview, discussion of the needs assessment environment and criteria for selection of methods. Part II

covers needs assessment methods, including the generic methods, nominal grouping, the delphi technique, the critical incident technique, competency-based management, assessment centres, performance appraisal, assessment of training needs for career development, and exit interviews. Part III covers Planning and Evaluation.

Universal Training Systems Co, How to develop and conduct successful in-company programs, Chicago: Dartnell Corporation, (1976) 329p.
Accompanied by tape: Successful in-company training, (22 minutes).

Utt, Charles T, "Flow-process charts: how they help determine employee training needs," Training, v.19, n.1, Jan. 1982: 80- (2p).

Utt, Charles, "Try force field analysis, too," Training, v.14, Dec. 1977: 19.
Somewhere between front end analysis (needs assessment) and rear end analysis (evaluation) is force field analysis - analyzing the forces "for" and "against" a change in behaviour of an individual or group. This article has a brief text and 2 diagrams to illustrate how this is done.

Vinton, K L, A O Clark and J H Seybolt, "Assessment of training needs for supervisors," Personnel Administrator, v.28, n.11, 1983: 45-51.

Warr, P B and M W Bird "Assessing the training needs of foremen," Journal of Management Studies, v.4, n.3, 1967: 332-353.

Wright, Patrick M and Kenneth N Wexley, "How to chose the kind of job analysis you really need," Personnel, May 1985: 51-55.
No one best method of job analysis exists. The usefulness of a technique depends on the purpose for which the data is subsequently used. In this article, first, a framework describing the types of information that can be collected through job analysis is presented. Next, some of the more popular types of job analysis are described. Finally, the kinds of information needed for various personnel activities and the methods that provide it are discussed.

Yaney, J P, "A critical review of the instructional technology mechanism of task analysis," Improving Human Performance, v.3, 1974: 64-70.

Zemke, Ron, "Behavioral observations: why the 'count and chart' approach to task analysis pays off," Training, v.16, n.9, Sep. 1979: 90- (3p).

Zemke, Ron, "How to conduct a needs assessment for computer literacy training," Training, v.20, n.9, Sep. 1983:24-27, 30-31.
Indicates that the most pervasive training challenge of the 1980's and 1990's is making sure that an organisation becomes computer literate. Suggests that the ability to analyse needs effectively and prescribe training precisely will be crucial for success.

Zemke, R, "Needs analysis: a concept in search of content," Training, v.18, n.7, 1984: 57-58.

Zemke, Ron, "Still trying to figure things out? Try using the critical incident method," Training HRD, April 1979: 70-73.
Brief description of the critical incident method, with 2 example case studies cited. Repeats part of chapter on the critical incident method in the book by Zemke and Kramlinger (See below).

Zemke, Ron, "Task analysis: figuring out what people need to learn," Training HRD, v.14, Dec. 1977: 16-20.
Discusses 5 different types of task analysis: the Look-and-see approach, the structure-of-knowledge approach, the critical incident approach, the process/decision flow chart approach and the consumer-research techniques. (See also book by Zemke and Kramlinger, listed below).

Zemke, Ron and Thomas Kramlinger. Figuring things out: a trainer's guide to needs and task analysis. Reading, Massachusetts: Addison-Wesley, 1982: 348p.
A comprehensive manual on the various types of needs and task analyses. Describes the techniques and tactics of the way the authors, in their own consulting work, approach the analysis of human performance problems. A first step is to decide whether the solution is training or something else. Section I describes the authors' strategic and tactical approach. Section II covers observation methods of task analysis. Section III covers other methods including (1) focus group discussions, (2) one-to-one interviews, and (3) telephone interviews. Section IV covers more methods (1) the critical incident technique, (2) concensus groups, and (3) surveys and questionnaires. Section V describes the analysis of information gathered, including making hypotheses about what the performance problem is, and choosing the most opportune locus for intervention to solve the problem. Also described are fault tree analysis and how to use learning hierarchies in task analysis. Section VI gives guidelines on when to use what method for both organisational and technical criteria, and how to select the right technique for a particular problem. Section VII covers how to report results to management. Appendix A is a reprint of Gagne's speech on task analysis, and Appendix B is Flanagan's original article on the critical incident technique.

Zepke, Nick, Occasional papers No.24: in pursuit of excellence. A personal view of vocational education in the United States, Lower Hutt: Tutor Training Unit for New Zealand Technical Institutes, 1985. 72p.
Concentrates on competency-based instruction, computer-assisted learning and ongoing professional development, but also covers the accountability of educators, vocational resources in America and equity issues. Contains a section on occupational analysis, (training needs analysis), and a subsection on the DACUM process. The final chapter relates the information to the New Zealand environment.

TRAINING OBJECTIVES

GENERAL

Note:

Some of the references that mention objectives also appear under the other headings. The abstracts will indicate which they are. See especially, references listed under "Systems Approach" and some of the references under "Training Needs Analysis - Other Approaches."

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Brient, Deborah E, "Don't just teach MBO, use it yourself," Training, v.14, Nov:1977: 54- (2p).
MBO = Management by Objectives.

Broadwell, Martin M, Supervisor and on-the-job training, 2nd edition, Reading, Massachusetts: Addison-Wesley, 1975: 156p.
Two sections on job analysis as a preliminary requirement of training needs analysis, to find out what is involved in a job and whether employees tend to be able to do it without formal training. Has a section on training objectives and how to design them, and a section on how to evaluate the success of training measured against those objectives.

Carkhuff, Robert R and Richard M Pierce, Training delivery skills II. Making the training delivery, Amherst, Massachusetts: Human Resource Development Press, 1984. 209p.
Aims to teach the critical skills needed to carry out training programs. Two sets of skills are emphasised: content of training and trainee experience. The training objectives section uses a skill steps/substeps method, and the evaluation section uses levels of evaluation, process movement, acquisition, application, transfer and achievement arranged in lists.

Dobles, Robert W, Patricia M Drost, Stanley S Hazen, and Robert C Hinkelman, "If you are not doing it already, verify your training objectives," Training, v.16, n.12, Dec. 1979: 36- (8p).

Gagne, R M, "Analysis of Objectives," in:
Instructional design : principles and applications, edited by Leslie J Briggs, Englewood Cliffs, N.J., Educational Technology Publications, 1977: 114-115.
See also Williams (1977) and Hunt (1986).

Gallegos, Robert C and Joseph G Phellan, "Using behavioral objectives in industrial training," Training and Development Journal, (USA), April 1974: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 125-130.

Goad, Tom W, Delivering effective training, California: University Associates, 1982. 183p.
Identifies five phases of training; analyse, design, develop, conduct, evaluate, looks at each phase in detail, covering such topics as C.A.I. audio-visual aids, how to set training objectives and how to evaluate training.

Gronlund, Norman E, Stating objectives for classroom instruction, 3rd edition, New York, Macmillan, 1985: viii, 79p.
This is a practical guide for preparing instructional objectives for use in classroom instruction. It describes how to state instructional objectives as intended learning outcomes and how to define the objectives in terms of student performance. That is, in terms of what students can do to demonstrate that they have learned. The procedures are illustrated throughout with sample objectives in teaching, testing, evaluation, and marking and reporting is also described and illustrated. The third edition contains some new material. Includes a chapter on using the Taxonomy of Educational Objectives.

Hadley, Jeff, "Setting standards of performance," Modern Management, v.1, n.1, Winter 1986: 24-26.
In an approach to setting objectives, differentiates between setting levels of performance and setting targets.

Hannah, Larry Stanley and John U Michaelis, A comprehensive framework for instructional objectives: a guide to systematic planning and evaluation, Reading, Massachusetts: Addison-Wesley, 1977: 223p.
A framework for instructional objectives that was developed with the cooperation and assistance of teachers; one that has proved helpful to them in their teaching. It is primarily a guide to writing objectives, preparing questions that focus on objectives, and preparing related assessment devices. It may also be used as a guide to the sequencing of lessons and units so that the students move from knowledge to operations on knowledge that involve increasingly more complex processes, to greater independence in development of skills, and to higher levels of commitment insofar as attitudes and values are concerned.

Harmon, Paul, "Developing performance objectives in job training programs," Educational Technology, November 30, 1968: 11-16.
Suggests a structured approach to getting instructors to prepare performance objectives, warns against pitfalls.

Kaufman, Roger and Donald L Mitchell, "Risk and training," Performance and Instruction, v.21, n.2, Mar. 1982:4-7.
Suggests that trainers take innovative approaches to training clients who work in high-risk jobs such as the military and recommends that external needs assessment, front end analysis, and task analysis be used to establish training goals and objectives. Nine references are listed.

Laird, Dugan, Approaches to training and development, 2nd edition Reading, Massachusetts: Addison-Wesley, 1985.

Lewis, James M, "The whens, whys and hows of behavioral objectives," Training, v.18, n.3, March 1981: 60-62.
A "do do, don't do" checklist for using behavioral objectives which has been culled from research into the effects of using behavioral objectives.

ED263380
MacFarland, Thomas W, A behaviorist strategy to improve vocational outcomes by promoting moderate goal setting. Florida, position paper 120, Dec 1985: 9p.
Research has shown that tasks of intermediate difficulty generally elicit the greatest efforts on the part of students. For this reason, teachers are advised that the use of moderate goal setting is one of the most effective means of ensuring favorable vocational outcomes. The general paradigm of achieving vocational success through moderate goal setting is as follows: analyze industrial and personnel needs; determine terminal objectives (by questioning and observing behavior); formulate and present enabling objectives (using the techniques of task analysis and linear programming); and assess student performance (by administering criterion-referenced tests). Although some critics of the behaviorist approach believe that this approach delegates educators to the role of mere classroom managers, practice has shown that the objectivity of the behaviorist approach lends support to the high degree of professionalism required if educators are to achieve desired vocational outcomes successfully.

Morrissey, George L, Appraisal and development through objectives and results, Reading, Massachusetts: Addison-Wesley, 1972.

Poulter, Bruce, Training and development, Sydney: CCH Australia, 1982. 166p.
Has a comprehensive section on training needs analysis and training objectives, giving types of training needs, types of needs analysis and

how to carry out needs assessment. A sample training needs survey is included. Preparing and setting training and behavioural objectives is discussed and set out in chart form.

Province of British Columbia Ministry of Education, DACUM.3. From skill profile to objectives, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 6p.
The third in a series of four books on the DACUM process. Looks at analysing the skill profile and setting objectives and adds a note on terminology regarding the word "objectives" to avoid confusion over learning, performance, terminal, instructional, enabling and behavioural objectives.

Rabey, Gordon P, Supervisor, Wellington, N.Z.: Paige productions, 1985.
A guide for new supervisors covering such areas as objectives, work planning, decision making, team development, skill training, staff appraisal and communication skills.

RAF School of Education. Resources Development Unit, A guide to the design of learning packages, RAF School of Education. Resources Development Unit, (?) 57p.
This guide has been produced to assist education officers who may be called upon to design learning packages. It is assumed that these education officers will be subject-matter experts and experienced in the teaching of the subject. Having studied the guide you will be able to: 1. define a learning objective, 2. write learning objectives, 3. identify objectives relevant to your target population, 4. arrange the objectives in a logical learning sequence, 5. list the types of tests which may be used, 6. construct appropriate tests, 7. define a learning resource, 8. list the types of learning resources available, 9. list the problems which may be encountered in the production of learning resources, 10. select appropriate learning resources for specific objectives, 11. define a learning package, 12. state the weaknesses of an unvalidated package, 13. list the methods of validation.

Ribler, Ronald I, Training Development Guide, Reston, Virginia, Reston Publishing, 1983. 215p.
After a short chapter on learning theories, this book is divided into chapters about the ten different tasks that need to be done when designing training. These include (1) needs analysis to identify training development requirements; (2) developing course objectives; (3) developing enabling objectives; (4) developing course criterion test items; (5) developing demonstration, practice and test items; (6) defining strategy; (7) preparing instructor's and trainees' materials; (8) developing instructor's or administrator's guide; (9) trying out the training package and (10) analyzing the results and revising. After this, the following subjects are covered: workshops and conferences; administration guide for self-instructional training; lesson plans; other training materials; computers in training; estimating costs; training trainers; evaluation of training; alternatives to training, and writing styles. Alternatives include analyzing causes for performance deficiencies, improving system design, training to treat symptoms, personnel selection and examining the validity of objectives.

Robinson, Kenneth R, A handbook of training management, 2nd edition, London, Kogan Page, 1985: 266p.
This book covers training objectives; training needs analysis; planning the overall programme; aspects of the training process including learning and behaviour as well as the methods and techniques of training. Also covered are the evaluation and validation techniques; training resources; and influences on the training function. Some areas of recent development in training are mentioned.

Smith, B J and B L Delahaye, How to be an effective trainer, New York, John Wiley & Sons, 1983: 306p.

Spears, Jerry O and Allen D Calvin, "The usefulness of informing students of training objectives," Performance and Instruction, v.21, n.5, Jun. 1982:34-36.
Gives the outcomes of a study of the impact on learning in industrial training programs that results from presenting adult students with a set of educational objectives prior to their enrollment in a course. Research procedures, the population studied, methods of measurement, data collection, and the results of the study are discussed.

"Training today: let's resolve to write better training objectives," Training, v.16, n.12, Dec 1979: 18.
Editorial comment.

Williams, R G, "A behavioural typology of educational objectives for the cognitive domain," Educational Technology, v.17, 1977: 39-46.
Contains a refinement of Gagne's model. The limitations of William's model are criticized by Hunt (1986) in "Needs assessment in adult education: tatical and strategic considerations." (see p.8 under Systems Approach).

TRAINING OBJECTIVES
COMPETENCY-BASED INSTRUCTION

Note:

This section contains references on the subject of competency-based instruction, its objectives and implementation. The references under Systems Approach are relevant to this topic also. Objectives are identified by Training Needs Analysis (DACUM and Other Approaches) and so many references listed under these headings contain relevant material.

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"Advice for performance-based training," Training, v.19, n.1, Jan 1982: 36.
Editorial comment.

Army School of Instructional Technology, The writing of training objectives, Beaconsfield, Bucks: RAEC Centre, Wilton Park, no publishing date given, 87p. (No.3 in the Series - "The Systems Approach to Training.")
Looks at the theory of training objectives - definition, need, different types - and then applies it to writing objectives using the systems approach.

Asian and Pacific Skill Development Programme, Skill testing of motor vehicle mechanics, Report of a regional workshop, Bombay, India 1981. Islambad, Pakistan: Asian and Pacific Skill Development Programme, (APSDEP), 1982. 79p.
Workshop held to promote and develop occupational skill standards, testing and certification within countries of the region. Covers several methods of performance testing such as norm-reference and criterion-reference methods and progress assessment tests, with a straightforward method of task analysis. Information on statistical analysis of test items is included.

Bailey, Catherine T, The measurement of job performance, Aldershot, Hampshire: Gower, 1983: ix 238p.
The use of and specific performance appraisal and measurement methods are examined. The concepts of criterion and dimension are discussed. The role of subjectivity in performance measurement is explored, and managing it discussed. The theoretical issues are addressed.

Becker, Stephen, "Competency analysis: looking at attitudes and interests as well as technical job skills," Training, v.14, n.12, 1977: 21-22.

ED254677

Bernstein, Richard and Roger A Mussell, Electronics curriculum planning guide for the 1980's and 1990's. Interim report, Flagstaff, Arizona: Northern Arizona University. Center for Vocational Education, 1984. 54p.

Study conducted as part of a project to develop a competency-based electrical/electronics, (E/E), curriculum in Arizona. Tasks centred around identifying competencies necessary for E/E jobs and establishing a framework for developing a statewide competency-based E/E technician training program.

Blank, William E, Handbook for developing competency-based training programs, Englewood Cliffs, New Jersey: Prentice-Hall, 1982. 352p.

Blumenfield, Warren S, "Attitude change as a criterion in training," Training and Development Journal, (USA) Oct. 1966: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 240-243.

Blumenfield, Warren S, Development and evaluation of job performance criteria: a procedural guide, Atlanta, Georgia: Publishing Services Division, School of Business Administration, Georgia State University, 1976. 46p.

Presents the idea of criteria as indexes of job performance, giving four sources of criteria: job sample, production, personnel and subjective rating.

Boyd, Joseph L Jr and Benjamin Shimberg, Handbook of performance testing. A practical guide for testmakers, Princeton, New Jersey: Educational Testing Service, 1971. 182p.

A handbook for practising vocational trainers to use in planning and preparing performance measures for evaluating instruction. Contains a wide selection of performance tests in use at the time for industries such as woodworking, fabric repairing, welding, dental hygiene and cosmetology.

ED228474

Chalupsky, Albert B et al, Development and evaluation of vocational competency measures. Final report, Palo Alto, Ca, American Institutes for Research in the Behavioural Sciences, 1982. 65p.

A series of occupational competency tests representing all seven vocational education curriculum areas were developed, field tested and validated. Seventeen jobs were chosen for test development, such as farm equipment mechanic, grocery clerk and apparel sales. Information was gathered through interviews, a job information test, hands-on performance tests, etc. with relevant employees.

Christie, R, "Training for competence - the nature and assessment of the beast," Training and Development, (USA) v.4, n.4, 1985: 3-5.
The author, an occupational psychologist, surveys techniques for the assessment of competence in a behavioural model of skill acquisition. Once criteria are established for determining the objectives to be achieved, then a base line of competence - or job description is arrived at. The passmark for assessing competence should thus be 100% and the author questions the validity of percentage pass grades for external examinations and professional bodies. If essential competencies can be identified then credit can still be given for additional abilities.

ED261219

Daniels M Harry et al, Toward the adoption and utilization of a model, strategies and procedures for introducing change skills instruction into Vocational Programs, Carbondale, College of Education, Southern Illinois University, Jul. 1985: 74p.
This project presented a conceptual model for adapting with change the strategies and procedures for introducing change skills instruction into vocational programs to groups of vocational educators and administrators at sites throughout Illinois. Following the presentations the project directors solicited feedback from the persons who attended, about the heuristic value of the conceptual model and the practical utility of the various strategies and procedures for introducing change skills instruction. The project also attempted to integrate the products developed through this project with the strategies used by the Competency-Based Vocational Education (CBVE) Project. This final report of the project includes documentation of all project activities; a summary of the evaluative feedback from workshop participants; a summary of the technical assistance provided to the CBVE sites; and strategies, procedures, and methods for disseminating the information generated in the project. A major portion of the final report consists of copies of major ideas and articles disseminated by the staff.

Davies, Ivor K, Competency-based learning: technology, management and design, New York, McGraw-Hill, 1973.

ED255708

Davis, Scott R and Alan Frost, Competency-based education for adult learners, 1985. 11p.
A concise summary of the theory and practice of competency-based education, especially as it applies to adult learners. Defines and lists critical components for CBE and cites advantages of the system. The organisation of CBE learning activities in a CBE program is illustrated with a flowchart and suggestions for developing CBE materials, achieving objectives and presenting material are put forward.

D.F., "Florida Power Corporation: focus on performance," Training, v.22, n.11, 1985: p.57-60.
Description of the problems the training department had with management, supervisors and unions, when they implemented a competency based way of directing training and evaluating trainees in on-the-job. How the problems were overcome and the employees started to use the training manuals to guide their own development.

Exploring competency-based education, edited by Houston, W Robert, Berkeley, McCutchan, 1974:

ED254615

Ferqueron, Margaret, Educating for the future: the effects of some recent legislation on secondary vocational education, Knoxville, Tennessee University: Office for Research in High Technology Education, 1984. 60p.

Problems arising from two possibly far-reaching legislative reforms within secondary vocational education; minimum competency requirements and increased course requirements for graduation. One problem is that course testing is the most immediate way for legislators to satisfy the public, the danger is that two different understandings of purpose-accountability versus effectiveness may emerge with regard to minimum competency testing.

ED252706

Further Education Unit, Towards a competence-based system. An FEU view, London: Further Education Unit, 1984. 13p.

Begins with the viewpoint that there is a common concern to raise standards of education and training and that wider access to training and jobs should be a priority. A wider definition of competence than that associated with working life is offered, one that embraces formal and informal learning, extends beyond occupational skills into life skills, and requires changes in attitude as well as methodology. Problems of competence assessment are discussed.

Gilbert, Thomas, Human competence : engineering worthy performance, New York, McGraw-Hill, 1978.

Gronlund, Norman E, Stating objectives for classroom instruction, 3rd edition, New York, Macmillan, 1985: viii, 79p.

This is a practical guide for preparing instructional objectives for use in classroom instruction. It describes how to state instructional objectives as intended learning outcomes and how to define the objectives in terms of student performance. That is, in terms of what students can do to demonstrate that they have learned. The procedures are illustrated throughout with sample objectives in teaching, testing, evaluation, and marking and reporting is also described and illustrated. The third edition contains some new material. Includes a chapter on using the Taxonomy of Educational Objectives.

ED174764

Gross, Ronald and Samuel C Brightman, A focus on responsibility - adult educators confront America's future: An interpretative report of the National Adult Education Conference (Portland, Oregon), New York: College Entrance Examination Board, 1978. 12p.

Adult education issues discussed at a national conference. The "5E" theme; employment, ethics, education, environment and energy presentations given; responsibility for basic adult education, national policy, the coming decade of adult education; opportunities for educators, competency-based adult education; industrial training opportunities, recruitment and development of volunteers learning resources, international perspective, adult education in armed services, working with the aging etc...

Hadley, Jeff, "Setting standards of performance," Modern Management, v.1, n.1, Winter 1986: 24-26.
In an approach to setting objectives, differentiates between setting levels of performance and setting targets.

Hall, G E and H L Jones, Competency-based education: a process for the improvement of education, Englewood Cliffs, N.J., Prentice-Hall, 1976.

Harris, R, McI and R B Hobart, "Occupational educators and industrial trainers in Australia," Journal of Studies in Technical Careers, v.4, n.2, Spring 1982:116-125.
The authors report on the use of competency-based instruction as a tool in the professional development of postsecondary occupational educators and industrial trainers in Australia.

Harris, Roger, "Spring or Indian Summer: competency-based approaches in Australian post-secondary education," Australian Journal of Adult Education, v.22, n.2, July 1982:3-11.
Suggests several areas in Australian adult education and training where a competency-based educational model would have application. Areas include the professional development of staff in educational institutions and industrial training establishments, training of educational administrators, vocational training of college students, and the development of functional literacy of adults.

ED192170

Huff, Shiela M et al, The Assessment of Occupational Competence 6. Summary: a synthesis of issues, Boston, Mass, McBer & Co. July 1980: 85p.
The final chapter of a seven-section report that examined the assessment of occupational competence. This chapter explores the key patterns and commonalities that have emerged from the study of occupational competency assessment. The chapter begins with a synthesis of the state of the art of competency definition and measurement under four topic headings: definition of competence (what is measured), derivations of competence variables (how hypothesized competencies are identified), the measurement of competence, and the validity of competencies defined. The synthesis is followed by an in-depth discussion of the themes which emerge from the points of view of the various components of the human resource development system: the consumer, the educational system, licensing and certification, employers, the federal government, and the research and development community. The third major portion of the chapter examines key countervailing forces which present problems for advancing the practice of defining and assessing competence. The concluding section discusses what the actors in the human resource development system can do to improve the practice of competence assessment through economic incentives, law and regulation, dissemination, government practice, and program evaluation. (Other sections of the report are available separately - see note. The first is an overview; the last is a synthesis of issues). (Note: for related documents see CE 027 159-164 in the Eric database.)

Hunt, Graham J F, "Needs assessment in adult education: Tactical and strategic considerations," Instructional Science, v.15, n.3 1986: 287-296.
Examines differences between needs assessment (process of determining the gap between what is and what should be) and task analysis (definition and classification of tasks to improve job performance) and discusses the human productivity model NEBEAT (Needs Education and Training Model) which defines competency as synthesis of processes and products.

ED277896
Hymel, Glen M, The case for criterion-referenced/modular-based instruction in business, industrial and military settings, paper presented at the annual meeting of the Mid-South Educational Research Association (Memphis, TN, November, 1986) 22p.
This paper advances the argument favoring criterion-referenced/modular-based instruction (CRMBI) as applied to training and educational efforts in business, industrial, and military settings, CRMBI is defined as an instructional delivery system (along with the concomitant curriculum design and instructional materials development implications) that accommodates the following themes: (1) predetermined learner outcomes; (2) prerequisite learner background; (3) instructional sequencing; (4) criterion-referenced evaluation; and (5) flexible student entry and exit points. The proliferation of the professional literature in this area over the past 20 years points to increasing acceptance of CRMBI, in particular in teaching risk-oriented technical skills and in the multitude of diverse training situations to which CRMBI has been directed. Finally, a variation of CRMBI that is small group-based and flexibly teacher-paced is presented as an optimal instructional management tool that maximizes time flexibility for the student in a responsible way. A seven-page reference list is provided.

ED192164
Klemp, George O Jr, The assessment of occupational competence: Final report 1. Introduction and overview, Boston:McBer and Co., 1980. 28p.
Introduction and overview investigating the definition and assessment of individual competence in education and work settings. Part of a seven section report. Focus is on work performance rather than the broader concept of life performance as the target of competence. The six chapters cover such aspects as competence assessment and personnel selection, current practices and trends, and the theory, practice and implications of assessment in education.

(Knowles) "Talking with Malcolm Knowles: the adult learner is a "less neglected species," Training, v.14, n.8, Aug. 1977:16-18.
A professor of adult and community college education at North Carolina State University, Malcolm Knowles, expresses his views on adult learning in interview form. According to Knowles inservice management development and industrial training programs, as well as public school and college programs, require a process structure of learning experiences, which he describes as a competency-based modular program.

Knowles, Malcolm S, The modern practice of adult education: from pedagogy to andragogy, Chicago, Assocation Press, Follet, 1980: 400p.
See especially chapter 6: "Assessing Needs and Interests in Program Planning," chapter 7: "Defining Purposes and Objectives," and chapter 10: "Evaluating Comprehensive Programs. Chapter 2: "What is Modern Practice?" chapter 3: "What is the Role and Mission of the Adult Educator," and chapter 4: "What is Andragogy?" together give the theoretical background to the current changes in vocational education.

Lange, Robert R et al, "Barriers and policy solutions for statewide implementation of competency-based vocational education," Journal of Studies in Technical Careers, v.8, n.1, Winter 1986: 80-88.
Barriers to successful implementation of competency-based vocational education (CBVE) programs include misperceptions about CBVE as well as a lack of funds and support services. These barriers can be overcome with a co-ordinated effort at state level.

Lerda, Louis W and Leslie W Cross, "Performance oriented training - results measurement and follow-up," Training Directors Journal, Aug. 1962: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 210-215.

ED201853
Long, Diana, Masonry student material. Competency-based education curriculum, A curriculum organised into twelve modules, which each comprise two to nine competency statements. There is a student competency sheet for each competency with a performance guide, learning activities and an evaluation. A teacher's guide is available separately.

Mager, Robert Frank, Preparing instructional objectives, Revised 2nd ed. Belmont, California: Pitman, 1984. 135p.
An objective describes the intended result of instruction rather than the process of instruction. Useful objectives describe 1. performance (what the learner is to be able to do) 2. conditions (important conditions under which the performance is expected to occur) and 3. criterion (the quality or level of performance that will be considered acceptable). Using a layout intended to facilitate learning, this book guides you through the process of recognizing and writing objectives. Examples to practise on are included.

Maginn, Michael, "Try competency-based instruction," Training, v.15, n.8, Aug. 1978: 80- (3p).

Mallory, W J, "A task-analytic approach to specifying tech training needs," Training and Development Journal, (USA), v.36, n.9, Sep. 1982:66-68, 70-73.
This article explains a performance-oriented approach to outlining technical training needs. The performance improvement cycle is

discussed and the three main activities in that cycle are described. They include need detection, task identification, and collection of task performance data.

Mansfield, Bob, "Getting to the core of the job," Personnel Management, Aug. 1985: 30-33.
Core analysis is a method of defining the essential components of a job using a reference list of skills. The article describes how the technique can be helpful in performance appraisal and in defining training needs.

Mansfield, Bob and David Mathews, Job Competence: a description for use in vocational education and training, Blagdon, Bristol, Further Education Staff College ESF Core Skills Project, 1985. 8p.
This leaflet offers an operational definition of job competence; including competence in a job and/or a range of occupational skills, and, competence in a range of transferable skills. As well as referring to competence in carrying out tasks, job competence refers to task management (order in which tasks are carried out, trouble shooting etc.) and to role/job environment (people skills, safety skills etc.).

Mathews, David and Bob Mansfield, Occupational standards: job competence and the measurement of achievement, Blagdon, Bristol, Further Education Staff College ESF Core Skills Project, 1985: 9p.
This leaflet explores the nature of existing occupational standards and the functions that new types of occupational standards should serve. It shows how the description of standards can vary according to the function for which they are used. It further investigates whether job competence might offer a basis for defining and using occupational standards. Job competence is taken to comprise three components concerned with tasks, task management and the role/job environment.

Michalak, Donald F and Edwin G Yager, Making the training process work: A practical guide to better training programs, New York: Harper & Row, 1979. 152p.
Covers training responsibility, needs and task analysis, training objectives program design, conducting the training and evaluating it. The needs analysis section uses a hybrid model which distinguishes "can't do" problems, (lack of skill/knowledge), from "don't do" problems, (motivational). Six other techniques are also outlined. Three evaluation methods are used; control group, placebo training and random sampling.

Mitchell, Lindsay, Competency testing: towards a definition and operationalisation, Scotland, unpublished paper, 1987: 14p. (apply to Vocational Training Council Library).

Monjan, Susan V and Susanne M Gassner, Critical issues on competency-based education, New York: Pergamon Press, 1979.

Moore, Elizabeth Randall, "Competency-based training evaluation," Training and Development Journal, (USA), v.38, n.11, 1984: 92-94.
A before-and-after performance appraisal based on competence factors measures the impact of your training programs.

Nadler, Leonard, Designing training programs: the critical events model, Reading, Massachusetts: Addison-Wesley, 1982.
Presents the critical events model and discusses several other models. The CEM is an open model that continuously involves managers and supervisors in the design process. It and the book, moves through the "events" of identifying the organisation's needs, specifying job performance, identifying learner needs, determining objectives, building a curriculum, selecting a training method, obtaining training resources, conducting the training and finally, evaluating it.

ED267227
National Center for Research in Vocational Education, Develop program goals and objectives, 2nd edition, Module A-6 of Category A-Program Planning, Development, and Evaluation, Professional Teacher Education Module Series, Columbus, Ohio State University: 1986: 36p.
This module, which is one in a series of 127 performance-based teacher education learning packages - focusing upon specific professional competencies of vocational teachers, deals with program planning, development, and evaluation. The three learning experiences included in the module deal with the rationale for and the concepts involved in developing vocational program goals and objectives, developing goals and objectives for a selected vocational program within a specified service area, and developing vocational program goals and objectives in an actual teaching situation. Each learning experience includes some or all of the following: an overview, an enabling objective, instructional test, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED259205
National Centre for Research in Vocational Education, Establish student performance criteria, 2nd edition, Module D-1 of Category D - Instructional evaluation. Professional teacher education module Series, Colombus, Ohio State University. 1985, 29p.
This learning module, one in a series of 127 performance-based teacher education learning packages focusing upon professional competencies of vocational teachers, deals with establishing student performance criteria. The module consists of three learning experiences designed to (1) provide prospective teachers with a knowledge of the key factors involved in establishing criteria for student performance, (2) establish partial criteria for student performance and identify additional information and sources needed to establish complete criteria for student performance in a case study situation, and (3) establish student performance criteria in an actual teaching situation. Included in each learning experience are some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a self-check activity, and model answers to the feedback exercise. The final learning experience also includes a checklist of teacher performance criteria.

ED269616

National Centre for Research in Vocational Education, Evaluate your instructional effectiveness, 2nd edition, Module D-6 of Category D-Instructional evaluation, Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 33p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, training teachers in how to evaluate their instructional effectiveness. Addressed in the individual learning experiences included in the module are the following topics: sources of feedback (teachers, state department of education supervisors and university faculty, oneself, and students); evaluation methods (observations, checklists, videotaping, assessments of student performance, and anecdotal records); and use of feedback results. Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED272748

National Centre for Research in Vocational Education, Evaluate your vocational program, 2nd edition, Module A-11 of Category A-Programme planning, development, and evaluation. Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 58p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, deals with developing a plan for evaluating a vocational program, performing a program evaluation, and developing a final evaluation report. Addressed in the individual learning experiences included in the module are the following topics: evaluating local vocational programs (the nature of program evaluation, key elements in a program evaluation model, and special evaluation concerns); development of and elements in a local program evaluation plan (description of the situation, statement of the evaluation philosophy and objectives, responsibilities, evaluation activities, limitations of the study, a schedule of activities, a statement of reporting procedures, and a summary of dissemination methods and plans for implementation); and preparation of the final report (presentation of data in text, tables, and figures; formulation of findings, conclusions, and recommendations; and distribution of the final report). Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED262292

National Center for Research in Vocational Education, Prepare yourself for CBE, Module K-1 of Category K-Implementing competency-based education (CBE), Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 67p.

This module, one in a series of performance-based teacher education learning packages, focuses on a specific skill that vocational educators need to integrate competency-based education (CBE) into the vocational education curriculum. The purpose of the module is to help

the instructor understand the educational philosophy on which CBE is based and how this is applied in practice, assess his/her readiness for CBE, and develop a plan for gaining the knowledge and skills he/she needs. Introductory material provides terminal and enabling objectives, prerequisites, a list of resources, and general information. The main portion of the module includes three learning experiences based on the enabling objectives. Each learning experience presents activities with information sheets, case studies, model critiques, inventories, worksheets, and checklists. Optional activities are provided. Completion of these three learning experiences should lead to achievement of the terminal objective through the fourth and final learning experience that provides for a teacher performance assessment by a resource person. An assessment form is included.

ED255717

New York State Division for Youth, Competency-based instruction: A guide in developing youth employment competencies, Albany, New York: New York State Division for Youth, 1984. 71p.

An introduction to the development of performance standards for youth employment and training programming. Topics covered include; roles and responsibilities under the Job Training Partnership Act, the nature of competency-based programs, examples of competencies, job market studies and methods of assessment.

ED279910

Norton, Robert E, Competency-based education and training: a humanistic and realistic approach to technical and vocational instruction, Background paper, Paper presented at the Regional Workshop on Technical/Vocational Teacher Training (Chiba City, Japan, May 11-22, 1987). Attachment F contains small blurred print. 56p.

This look at competency-based education (CBE) begins by defining competency-based training. The five essential elements are discussed - competencies, criterion-referenced evaluation, provision for individual development and evaluation, requirement of student performance, and student-paced instruction. Facilitating or supporting characteristics are listed; these are grouped into instructional and administrative characteristics. Benefits of CBE are highlighted. Focus then shifts to identification of training program needs. A suggested comprehensive vocational education program planning model is presented. Three steps are discussed in some detail: assessing individual needs and interests (including student vocational and educational interests, student needs, student abilities, and adult training and retraining needs), assessing labor market needs, and analyzing and synthesizing existing programs and services. A discussion of development of competency-based instructional materials is followed by information on occupational skill competency-testing, available test products and services, and test selection. Attachments include a CBE student-evaluation model, more specific information on program planning, a reference guide to writing student learning guides, and a CBE program evaluation checklist.

ED164746

Norton, Robert E et al, The identification and national verification of competencies important to secondary and post-secondary administrators of vocational education. Final report: development of competency-based instructional materials for local vocational education administrators - Part 1. Research and development series No.141, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education. 1977. 120p.

Research undertaken to identify and nationally verify competencies important to local administrators of vocational education. DACUM used to extend skills located in a literature search, and the competency statements were incorporated in a Task Inventory Instrument. Submitted to different administrators and analysed.

ED261147

Oen, Urban T, Identify the characteristics of a competency-based vocational education (CBVE) program, Addison, Ill. Self-instructional competency-based professional teacher training manual, Competency-Based Individualized Vocational Education Consortium, 1985: 54p.

This publication is part of a series of self-instructional teacher training manuals designed to assist vocational-technical educators or industrial trainers to develop and implement competency-based vocational education (CBVE) programs. The purpose stated for this manual is for the instructor to learn to identify the characteristics of a competency-based vocational education program. Each manual contains the following sections: cover page that contains the task title, purpose, and information block (program and task codes, estimated time, prerequisites); terminal performance and micro-performance objectives; procedures for completing this manual; learning activities with required resources cited; information sheets; activity sheets (self-checks) with answer keys; a written examination with answer key; and a product/performance checklist.

ED261145

Oen, Urban T, Write measurable performance objectives, Addison, Ill. Self-instructional competency-based professional teacher training manual, Competency-Based Individualized Vocational Education Consortium, 1985: 65p.

This publication is part of a series of self-instructional teacher training manuals designed to assist vocational-technical educators or industrial trainers to develop and implement competency-based vocational education (CBVE) programs. The purpose stated for this manual is for the instructor to learn to develop measurable performance objectives. Each manual contains the following sections: cover page that contains the task title, purpose, and information block (program and task codes, estimated time prerequisites); terminal performance and micro-performance objectives; procedures for completing this manual; learning activities with required resources cited; information sheets; activity sheets (self-checks) with answer keys; a written examination with answer key; and a product/performance checklist.

ED260234

Office of Vocational Education, Job keeping skills, Columbia, South Carolina State Department of Education, May 1985: 465p.

This curriculum is designed to help teachers teach a course in job keeping skills to high school students in order to instill in them

appropriate attitudes for the world of work. The guide introduces the human aspects of working in an organization. "Job Keeping Skills" is divided into 10 instructional units. Each unit contains four or more lessons that can each be completed in approximately 50 minutes of class time. Each lesson consists of these components: unit title, lesson tile, educational concept, objectives, resources needed, learning activities, evaluation, other suggested resources, and follow-up activities. Topics of the units are the following: understanding free enterprise, motivation, work attitudes and habits, appearance, learning the job, safety, communication, take-home pay, terminating the job, and job advancement. A seven-page bibliography of printed and audiovisual resources is included.

Ontario Society for Training and Development, Competency analysis for trainers: a personal planning guide, Ontario: Ontario Society for Training and Development Professional Development Committee, 1982. 40p.
An operational model of competencies and skills identified by qualified training and development practitioners. Defines four training and development functions; instructor, designer, manager and consultant, and three proficiency level indicators, high, medium and low, to show levels of skill or knowledge required. Being a self-development appraisal process the user chooses a competency area, e.g. administration, training needs analysis, and turns to the appropriate table.

ED091552

Oriel, Arthur E, Improving performance in technical and apprentice training. A pilot study of performance-based apprentice training, Chicago: Development Systems Corporation, 1974. 235p.
Trial of the Performance Based Apprentice Training (PBAT) experimental program in the metal trades where performance was the main criterion of success. After one year of an average 61 hours of instruction, candidates scored 30% higher in a final exam than those who had had an average of 187 hours of training. Demonstration that the quality, intensity, effectiveness and sequencing of training is more important than the number of hours offered.

ED133462

Oriel, Arthur E, Joint workshops: Performance-based apprentice and technical training: Final report, Chicago: Oriel (A.E.) and Associates Ltd., 1976. 127p.
A series of workshops held to give information about Performance Based Training (PBT), to industrial/college and apprenticeship/training personnel. Of the two groups, 90% and 61% respectively recommended the scheme after the workshops because of more efficient work done by trainees under the scheme.

Patrick, Peggy Winchell, Training effectiveness evaluation, presented at the National Conference on Achieving Professional Excellence, 1985, Little Rock, Arkansas, 28p.
The concept of training effectiveness evaluation should not be confused with training evaluation per se. It is a more comprehensive term which encompasses training evaluation. Training effectiveness evaluation

addresses the following questions: 1. Does the training achieve the purpose for which it was planned? 2. Does the training improve job performance? 3. Are performance objectives stated and tested? 4. Is the instructional process effective? 5. Are individual needs considered in training? This paper explains what the concept is, why it is used, and how to conduct training effectiveness evaluation. Paper copies of transparencies used with the original presentation are appended.

ED192167

Pottinger, Paul S et al, The assessment of occupational competence: 3. Competence assessment for occupational certification, Boston: McBer and Co., 1980. 170p.

One of seven sections of a report examining occupational competence, this chapter looks at the issue of certification of services performed by the person with the credential. Competence assessment is currently a component of certification, so how an occupation becomes a profession is looked at. The definition and measurement of competence is discussed.

RAF School of Education. Resources Development Unit, A guide to the design of learning packages, RAF School of Education. Resources Development Unit, (?) 57p.

This guide has been produced to assist education officers who may be called upon to design learning packages. It is assumed that these education officers will be subject-matter experts and experienced in the teaching of the subject. Having studied the guide you will be able to: 1. define a learning objective, 2. write learning objectives, 3. identify objectives relevant to your target population, 4. arrange the objectives in a logical learning sequence, 5. list the types of tests which may be used, 6. construct appropriate tests, 7. define a learning resource, 8. list the types of learning resources available, 9. list the problems which may be encountered in the production of learning resources, 10. select appropriate learning resources for specific objectives, 11. define a learning package, 12. state the weaknesses of an unvalidated package, 13. list the methods of validation.

Reilly, Robert R and Lewis Koenigsberg, "Occupational competency exams: a model for assessing reliability and validity," American Vocational Journal, v.46, n.5, May 1971:47-49.

Reports the results of a research and development study to determine the reliability and validity of the written and performance occupational competency tests used in New York State.

Ribler, Ronald I, Training Development Guide, Reston, Virginia, Reston Publishing, 1983: 215p.

After a short chapter on learning theories, this book is divided into chapters about the ten different tasks that need to be done when designing training. These include (1) needs analysis to identify training development requirements; (2) developing course objectives; (3) developing enabling objectives; (4) developing course criterion test items; (5) developing demonstration, practice and test items;

(6) defining strategy; (7) preparing instructor's and trainees' materials; (8) developing instructor's or administrator's guide; (9) trying out the training package and (10) analyzing the results and revising. After this, the following subjects are covered: workshops and conferences; administration guide for self-instructional training; lesson plans; other training materials; computers in training; estimating costs; training trainers; evaluation of training; alternatives to training, and writing styles. Alternatives include analyzing causes for performance deficiencies, improving system design, training to treat symptoms, personnel selection and examining the validity of objectives.

Rogers, Sandra K and Maurine F Dahlberg, Complete Statistical Survey results of 1982 Texas Competency Validation Project, Killeen, Texas: Central Texas College, 1982.
Also available as Eric Document (see below).

ED234202

Rogers, Sandra K and Maurine F Dahlberg, Complete statistical survey results of 1982 Texas competency validation project, Killeen, Texas:Central Texas College, 1982. 129p.
Report on a project aimed at developing current statewide (Texas), validated competencies for auto and diesel mechanics, welding, office occupations and printing. The four steps in competency validation are described, competency lists and performance objectives developed by the project team are discussed, and this result information given - survey procedures, data analysis and reduction, major results and conclusions, additional results, specific products produced, regional trends and a summary of results.

ED218500

Rogers, Sandra K and Maurine F Dahlberg, 1982 Texas competency validation project for automechanics, diesel mechanics, office occupations, printshop trades and welding. Final Report, Killeen, Texas:Central Texas College, 1982. 48p.
A statewide, (Texas), competency validation project to provide current information about job skills for the above jobs. Includes lists of validated job skills designated as "important to know," performance objectives and assessments for testing student mastery, and a users' manual describing competency validation.

ED277444

Seitz, Fred, CBE: the right angle for learning, Beaufort Technical College, SC. Center for Staff and Curriculum Development, Aug 1986: 42p.
Designed for instructors at Beaufort Technical College (BTC) in South Carolina, this handbook provides a brief guide to competency-based education (CBE) and to the available resources at the college for assistance. Section 1 offers introductory comments on the concept of quality control and the five basic components of educational quality control. Section 2 defines CBE, identifying its seven essential elements as the definition and verification of program competencies; the assignment of program competencies to courses; the provision of

course syllabi containing specific competency statements to students; the statement and design of learning objectives and activities to teach each competency; the construction and administration of criterion-referenced teacher-made tests to determine student knowledge; the provision of remediation and/or acceleration/enrichment; and the assessment of program content and method of delivery. Section 3 focuses on the need for CBE and the differences between the traditional and competency-based education approaches. Section 4 explains how an instructor plans for and implements CBE, offering guidance on assessment, curriculum design, instruction, course and student evaluation and subsequent revisions. Section 5 lists and describes available campus resources. Appendices provide information on institutionally-defined competencies for degree graduates, program outcomes statements for 10 occupational programs, a glossary, a verb list for use in instructional objectives, checklists for performance objectives and criterion-referenced test items, tips for CBE instruction, a sample DACUM chart sample, and syllabus format.

Solomon, Gerald and Ara Bouloutian, "Building a performance system - not a training system," Training, v.36, n.9, September 982: 32-34.
The goal of a performance engineer is to build systems to attain levels of desired performance - a performance system, or method of attaining predicted levels of performance based on a positive return on investment. To do this six factors can cause the desired change. One is training. The six factors are set out in the "Six-Cell Performance Engineering Model" (a transparency of the model is included).

Sullivan, Howard and Norman Higgins, Teaching for competence, New York, Teachers College Press, Columbia University, 1983: 104p.

Swezey, Robert W, Individual performance assessment: an approach to criterion-referenced test development. Reston, Virginia: Reston, 1981. 177p.
Looks at criterion-referenced measurement as a performance assessment method. The difference between criterion-referenced and norm-referenced measurement is stressed: the former evaluates mastering of a given skill or knowledge or set of objectives while the latter merely evaluates performance relative to that of comparable individuals.

The performance appraisal sourcebook, edited by Lloyd S Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1982: 190p.
Begins by defining performance appraisal then defines performance and how to develop performance criteria. The third section covers job analysis, types of performance measures, and choosing the right method. This is followed by how to carry out performance appraisal, how to train the raters giving performance feedback, and using appraisal for human resource management. There are numerous examples of tests and methods such as behaviorally anchored rating scales (BARS) managing by objectives (MBO) relative rating systems and graphic rating scales.

Torshen, Kay P, The Mastery Approach to Competency-Based Education, New York, Academic Press, 1977.
The goal of this book is to provide practitioners and advanced students with a synthesis and critical evaluation of the theory, research, and practical experience derived from investigations of competency-based education throughout the twentieth century. The first section focuses upon issues and problems relevant to implementation of competency-based educational programs covering a wide range of subject matter areas and student age levels, from preschool through graduate and professional training. The remaining two sections contain an in-depth consideration of the mastery model for curriculum structure that continues to be widely used in competency-based educational programs at all academic levels, as well as in business and industrial training programs.

"Training terms: mastery learning nobody flunks," Training, v.22, n.5, May 1985: p.141- (2p).

"Training today: competency model integrates performance, knowledge, skill," Training, v.20, n.4, April 1983: 15-16.
A competency statement is neither a performance objective nor a behavioral description. Think of behaviors, performance, tasks, knowledge and skill as parts of a system; then think of competence as the system itself.

Trivett, David A, Competency programs in higher education, Washington D.C., American Association for Higher Education, 1975.

ED102353
Westinghouse Learning Corporation, Prevocational basic skills module. Vocational behaviour objectives: a guide for individualizing instruction, New York:Westinghouse Learning Corporation, 1973. 30p.
Curriculum guide dealing with prevocational basic skills at the secondary level of vocational education and industrial arts. Objectives suit individual systems and can be for small or large groups. Major tasks broken down to subtasks at four levels of competency.

ED102356
Westinghouse Learning Corporation, Metal trades modules. Vocational behavioral objectives: a guide for individualizing instruction, New York:Westinghouse Learning Corporation, 1973. 47p.
Guide focussing on metal trades at the secondary level of vocational education and industrial arts. There are two skill modules, welding and sheetmetal welding formulated to be compatible with individual programs or small/large groups. Major tasks are broken into subtasks which have four levels of competency.

ED255656
Williamson, Bert and Joe F Pedersen, Performance testing in electronic technology. Final report, Mount Vernon, Washington:Skagit Valley College, 1984. 97p.
A set of 21 performance tests in electronics technology developed on

the basis of a review of commercial and noncommercial instructional materials relevant to electronics. Each test includes information on purpose, time limits, materials needed for administration and procedures, and notes on grading standards.

ED192166

Williamson, Stephen A and Mary Lou Schaalman, The assessment of occupational competence. 2. Assessment centers: theory, practice and implications for education, Boston:McBer and Co., 1980. 301p.
One of seven chapters in a report examining the assessment of occupational competence, this chapter looks at assessment centers, beginning with their origins and development to current practice. Key issues are discussed, such as; is the center useful as a way of identifying competencies? Does it measure potential or current ability? To what use do organisations put data gathered on individuals?

Zemke, Ron, "Goal setting is the first step in any performance program," Training, v.17, n.7, July 1980: A5- (2p).

Zemke, Ron, "Job competencies: can they help you design better training?", Training, v.19, n.5, May 1982: 28- (4p).
A growing number of trainers use the concept of competencies to help them determine what trainees need to learn; but precisely what makes a competency is still up in the air. This article reports interviews with a variety of experts each with a different view of competencies. It appears that each expert is enthusiastic about the results of their view. Only time will tell if they have overestimated or underestimated the potential of a competency approach.

Zemke, Ron, "Training terms: competency-based training v.s. criterion referenced instruction: What's the difference?", Training, v.21, n.3, March 1984: 81-82.
The concensus of opinion is that they are different words for the same thing.

Zemke, Ron and John Gunkler, "28 techniques for transforming training into performance," Training, v.22, n.4, April 1985: p.48- (15p).
This article gives 28 ways in which a trainer might go about increasing the probability that a skill learned in the classroom is used back on the job. The authors point out that the problem of transferring learning to actual use on the job is a perennial one. The suggested techniques are not exhaustive, but are a start in the right direction.

Zepke, Nick, Occasional papers No.24: in pursuit of excellence. A personal view of vocational education in the United States, Lower Hutt: Tutor Training Unit for New Zealand Technical Institutes, 1985. 72p.
Concentrates on competency-based instruction, computer-assisted learning and ongoing professional development, but also covers the accountability of educators, vocational resources in America and equity issues. Contains a section on occupational analysis, (training needs analysis), and a subsection on the DACUM process. The final chapter relates the information to the New Zealand environment.

EVALUATION AND VALIDATION OF TRAINING

Note:

This section includes the topics of evaluation of programmes, validation of programmes and performance appraisals. The term "evaluation" refers to finding out whether the subjects, skills and attitudes taught have been absorbed by the trainees. The term "validation" refers to finding out whether the correct subject matter, skills and attitudes have been taught, when the overall goals of the training programme are considered. Performance appraisals may be appraisals of individual performance, of group performance, or of organisational performance.

Some of the references under Systems Approach, and Training Needs Analysis-Other Approaches, deal partly with evaluation and/or validation. The sections on objectives are relevant, because objectives comprise the yardstick against which programmes are measured.

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ED251514

Alkin, Marvin C. et al, Annual report. Technical reports. Evaluation productivity report, Los Angeles: California University Center for the Study of Evaluation, 1984. 145p.

Presents three reports after outlining the 1984 activities and results of the Center for the Study of Evaluation's (CSE's) Evaluation Productivity Report. The reports are: "The administrator's role in evaluation use", "Factors common to high-utilization evaluations:, and "Reflections on evaluation costs: direct and indirect".

ED251515

Alkin, Marvin C. et al, The administrator's role in evaluation use. Evaluation productivity report, Los Angeles:California University. Center for the Study of Evaluation, 1984. 46p.

Research has uncovered a variety of factors influencing potential use of evaluation. These factors reflect human considerations, such as people's attitudes toward and expectations of the evaluation, context considerations, procedures used and means of communicating the evaluation. Suggests that the potential and applications of evaluation can be greatly enhanced if it is organised to meet specific needs in light of the factors operating, and that a program level administrator is the best person for the job.

Alves, Euro and William R Handy, "Evaluating supervisory training in Los Angeles County," Training Directors Journal, August 1963: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 132-134.

Army School of Instructional Technology, Validation of training: a basic guide, Beaconsfield, Bucks, RAEC Centre, Wilton Park, Sept. 1974: 58p. (No.4 in the Series - "The Systems Approach to Training.")
The desirable characteristics of measuring instruments used in the assessment of training are validity, reliability, objectivity, freedom from contamination, discrimination and practicability. The assessment techniques discussed are questionnaires, report forms, and interviews. 8 steps in the validation of training are described. Steps 1-6 are concerned with internal validation and steps 7 and 8 with external validation of training. Course effectiveness questionnaires are appended.

Army School of Training Support, The use of tests in training, Beaconsfield, Bucks, RAEC Centre, Wilton Park, (?) 29p. (No.5 in the Series - "The Systems Approach to Training").
A guidebook for those involved in test development, test design, test administration and the validation of training. Gives examples of practical tests (performance tests) and their scoring, written tests and their marking and oral tests. Oral tests are only used when tests of another type cannot be used.

Bakken, D and A L Bernstein, "A systematic approach to evaluation," Training and Development Journal, (USA) v.36, n.8, 1982:44-51.

Beck, Arthur C Jr and Ellis D Hilmar, "Training for 'organization' results," Training, v.16, n.4, April 1979: 74, 76-79.
Although not directly about validation, this article makes points that anyone involved in validation and evaluation needs to take into account. It says that the critical question is: what contribution did the training event make to a desired organizational outcome or result? The organizational result is outside of the individual or the individual unit. Activities, such as seminars, may be well run, yet not have the desired organizational result. Trainers need to take a problem solving approach to identify the desired organizational result.

Belasco, James A and Harrison M Trice, "Unanticipated returns of training," Training and Development Journal, (USA), July 1969: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 66-71.
The therapeutic value of training session for supervisor's feelings of frustration and aloness, and the formal recognition that supervisors exist are two of the by-products of training sessions, there are more uncovered by this evaluation study.

Bell, James D and Deborah Kerr, "Measuring training results: key to managerial commitment," Training and Development Journal, (USA) v.41, n.1, Jan. 1987: 70-73.
Training evaluation on four levels: do participants like it? Did they learn? Do they use it? and Did it impact the bottom line?

Benjamin, Ellen R, "Using the 'post-then' method of evaluation," Training, v.19, n.11, Nov. 1982: 72.

ED199565
Bernard, Jeanne T and R Michael Digman, An overview of miner training: recommendations for curriculum development, instructional strategies and evaluation techniques for classroom training, Paper presented at the Annual Meeting of the American Educational Research Association, (Los Angeles), 1981. 18p.
Report of a study conducted to evaluate the effectiveness of miner training of new miners and those taking an annual refresher course. Results showed that for underground inexperienced workers, that training eliminated educational differences. For refresher trainees, previous training, and not years of experience was significant in pre-test scores.

Birnbrauer, Herman, "Trouble-shooting your training program," Training and Development Journal, (USA) v.41, n.9, Sept. 1987: 18-20.
If trainees fail to implement on the job what they have learned in training, it means you have to examine the program for weaknesses in objectives, instructional design or delivery, and for environmental barriers in the workplace. Formative and summative evaluation are both required. A list of questions for formative and summative evaluation is included. Kirkpatrick's four levels of training evaluation are recommended as a planning model; they include trainee reaction, trainee learning, trainee behaviour on the job, and organizational results. In this article a wide field of concepts is covered very succinctly.

Black, H D and W B Dockrell, Diagnostic assessment in technical education: a teacher's handbook, Edinburgh: Scottish Council for Research in Education, 1980: 76p.
Looks at a model for evaluation of individuals in technical education, the diagnostic assessment process, which is designed to counteract the negative pass-fail theory of ordinary tests and exams. Includes numerous examples of tests which can be applied using the model. (Although the book focusses on technical education in secondary schools, the material can be easily adapted to a training environment).

Blumenfield, Warren S, "Attitude change as a criterion in training," Training and Development Journal, (USA) Oct. 1966: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 240-243.

Blumenfield, Warren S, Development and evaluation of job performance criteria: a procedural guide, Atlanta, Georgia: Publishing Services Division, School of Business Administration, Georgia State University, 1976. 46p.
Presents the idea of criteria as indexes of job performance, giving four sources of criteria: job sample, production, personnel and subjective rating.

Bowman, Barbara, "SINS of omission: the missing link in evaluation," Training, May, 1987: 45-48.
How to evaluate needs not met, classes not taught, and opportunities not realized. Link human resource development (HRD) to your organization's strategic plan. Produce a total program evaluation, based on a needs assessment. Fill in the gaps with informal sources of information.

Borus, Michael E, Measuring the impact of employment-related social programs. A primer on the evaluation of employment and training, vocational education, vocational rehabilitation, and other job-oriented programs, Kalamazoo, Michigan: W E Uphohn Institute for Employment Research, 1979, 139p.
Defines evaluation and gives three broad types; process, impact and strategic analysis, concentrating on all aspects of impact evaluation in chapter 2. Looks at case-study, before-and-after, comparison group and random control group methods are evaluated as alternative, but problematic, methods.

Boyd, Joseph L Jr and Benjamin Shimberg, Handbook of performance testing. A practical guide for testmakers, Princeton, New Jersey: Educational Testing Service, 1971. 182p.
A handbook for practising vocational trainers to use in planning and preparing performance measures for evaluating instruction. Contains a wide selection of performance tests in use at the time for industries such as woodworking, fabric repairing, welding, dental hygiene and cosmetology.

Boydell, T H, A guide to the identification of training needs, London: British Association for Commercial and Industrial Education, 1976: 44p.
Concentrates more on establishing a need for training needs analysis and its definition than on the actual analysis process. Five approaches are described - the organisation development approach, welfare approach, administrative and political approach, but not in any detail. Appendices cover characteristics of training approaches, data-collection methods, and systematic training in ten steps.

Bramley, Peter, Evaluation of training: a practical guide, London: BACIE, 1986: 64p.

Bramley, P and A C Newby, "The evaluation of training: 1. Clarifying the concept," Journal of European Industrial Training, v.8, n.6, 1984:10-16. (See also Newby and Bramley, "The evaluation of training part II: the organisational context,").

The literature is generally unhelpful in the confusion of concepts and terminology and in the problems of translating these various schemes into practice. This article clarifies some of these confusions by discussing the sequence of steps and the key issues which need to be faced when conducting an evaluation.

ED209546

Brandenburg, Dale C, Quality assurance of human resources development programs: a socio-technical continuum approach, Paper presented at the Annual Meeting of the Adult Education Research Association, (Los Angeles, CA.), 1981. 25p.

A useful, values-oriented human resource development (HRD) program evaluation approach is one that is empirical with its orientation derived from a social/technical perspective. Three continua are important; the general context of training, education and development, time dimensions, and action components, such as source types and collection methods for data. Time is the most critical dimension.

Brandenburg, D C, "Training evaluation: what's the current status?" Training and Development Journal, (USA), v.36, n.8, 1982:14-19.

Research report on function of evaluation and roles of evaluations.

Brinkerhoff, Robert O, "The success case: a low-cost, high-yield evaluation, "Training and Development Journal, (USA) v.37, n.8, Aug. 1983: 58-61.

Describes an evaluation method called "success case," in which trainees for whom the training really seemed to work are interviewed. They are asked (1) How have you used the training? (2) What benefits can be attributed to use of the training? (3) What problems did you encounter in using the training? What were the negative consequences of the training and/or its use? and (4) What criteria did you use to decide if you were using the training correctly or incorrectly?

Broadwell, Martin M, Supervisor and on-the-job training, 2nd edition, Reading, Massachusetts: Addison-Wesley, 1975: 156p.

Two sections on job analysis as a preliminary requirement of training needs analysis, to find out what is involved in a job and whether employees tend to be able to do it without formal training. Has a section on training objectives and how to design them, and a section on how to evaluate the success of training measured against those objectives.

Buckley, R and J Caple, "The training audit," Journal of European Industrial Training, v.8, n.7, 1984:3-8.

Description of a model for examining the training system, called the training audit. The approach includes scrutinising the way in which training needs are assessed, the way training is designed and conducted, and the methods of validation and evaluation that are employed.

Byham, William C, "How assessment centres are used to evaluate training's effectiveness," Training, v.19, n.2, Feb. 1982: 32- (3p).

ED254650

Campbell, Paul B and Phyllis Panzano, Toward excellence in secondary vocational education: elements of program quality, information series No.291, Columbus, Ohio: Ohio State University, Columbus. National Center for Research in Vocational Education, 1985. 45p.
Informs policy makers of the breadth of the elements of quality, suggesting an integrated framework for assessing quality. The framework is composed of three critical components: context, educational experience and vocational outcomes. Elements of quality are divided into individual and societal.

Cantor, J A, "The Concerns-Based Adoption Model: implications for institutionalization of change in technical training programs," Journal of Studies in Technical Careers, v.6, n.3, 1984: 205-213.
The educational practitioner responsible for training programs has become increasingly accountable for the outcomes of the training process. Attention has been focused upon methods of evaluation to measure effectiveness, the evaluation process can assist in designing strategies to further the training process. The Concerns-Based Adoption Model is a three-dimensional evaluation model that approaches the process from the standpoint of the trainee.

Carkhuff, Robert R and Sharon G Fisher, Instructional Systems design II: evaluating the instructional system, Amherst, Massachussetts: Human Resources Development Press, 1984. 151p.

Carkhuff, Robert R and Richard M Pierce, Training delivery skills II. Making the training delivery, Amherst, Massachusetts: Human Resource Development Press, 1984. 209p.
Aims to teach the critical skills needed to carry out training programs. Two sets of skills are emphasised: content of training and trainee experience. The training objectives section uses a skill steps/substeps method, and the evaluation section uses levels of evaluation, process movement, acquisition, application, transfer and achievement arranged in lists.

Carlisle, Kenneth E, "Why your training-evaluation system doesn't work," Training, v.21, n.8, Aug. 1984: 37- (3p).

Catalanello, Ralph F and Donald L Kirkpatrick, "Evaluating training programs the state of the art," Training and Development Journal, (USA) May 1968: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 258-262.

ED228474

Chalupsky, Albert B et al, Development and evaluation of vocational competency measures. Final report, Palo Alto, Ca, American Institutes for Research in the Behavioural Sciences, 1982. 65p.
A series of occupational competency tests representing all seven vocational education curriculum areas were developed, field tested and validated. Seventeen jobs were chosen for test development, such as farm equipment mechanic, grocery clerk and apparel sales. Information was gathered through interviews, a job information test, hands-on performance tests, etc. with relevant employees.

Coffman, L, "Succesful training program evaluation," Training and Development Journal, (USA), v.34, n.10, 1980:84-89.
Description of a workshop approach in evaluating a training program's effectiveness.

Couch, Peter D and George B Strother, "A critical incident evaluation of supervisory training," Training and Development Journal, (USA), Sept. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 154-159.

Crawford, Harold E, "A note of caution on listening training," Training and Development Journal, (USA), May 1967: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 116-118. Study shows possible false impressions and over-evaluation.

Cronbach, Lee J, "Course improvement through evaluation," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 101-115.

Cronbach, Lee J and Associates, "Ninety-five theses for reforming program evaluation," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing 1983: 405-412.

Deming, Basil S, Evaluating job-related training: a guide for training the trainer, Washington D.C.: American Society for Training and Development/Englewood Cliffs, New Jersey: Prentice-Hall, 1982.
This book covers the major tasks an evaluator must perform when evaluating training, and it defines and illustrates the many evaluation skills required to perform those major tasks. After studying the book, the reader should be able to apply each of these skills.

Denova, C C, Test construction for training evaluation, New York, Van Nostrand and Reinhold, 1979: 118p.

D.F., "Validity and reliability: a very short course," Training, v.23, n.3, March 1986: 89-90.
A test or survey is reliable if it yields consistent results at two different points in time, assuming there have been no major changes in people or circumstances and no intervening treatments. An assessment instrument is "valid" if it accurately measures what it is supposed to measure. It is possible for an assessment instrument to be reliable, but not valid.

Distefano, M K Jr et al, "Job-relatedness of a post-training job knowledge criterion used to assess validity and test fairness," Personnel Psychology, v.33, n.4, Winter 1980:785-793.
Significant job-relatedness was found for a post-training job knowledge test criterion. Content validity test methods may be able to help solve the problem of criterion relevance in validation research by providing quantitative relevance of job-relatedness.

Dopyera, John and Louise Pitone, "Decision points in planning the evaluation of training," Training and Development Journal, (USA), v.37, n.5, May 1983: 66-71.
There are eight decision points when planning an evaluation: (1) Should an evaluation be done? (2) What is the purpose of the evaluation? (3) What will be measured? (4) How comprehensive will tne evaluation be? (5) Who has the authority and responsibility? (6) From where will the data come? (7) How will the data be collected and compiled? (8) How will the data be analyzed and reported?

Dunn, S and K Tnomas, "Surpassing the "smile sheet" approach to evaluation," Training, v.22, n.4, 1985:65-67,71.
Identifies four levels of evaluation for training and development programs and describes building an evaluation of instructional design.

Ecenboy, Cliff, "Evaluating training effectiveness: a form that seems to work," Training, v.20, n.7, July 1983: 56- (2p.).

Erkut, Sumru and Jacqueline P Fields, "Focus groups to the rescue," Training, v.41, n.10, Oct. 1987: 74-76
Here is an evaluation method for those times when you need to make qualitative judgements, but do not have any objective data. It can be used to pretest training materials. A facilitator is needed, and the success of the focus group as an evaluation technique rests on the facilitator's expertise. A sample of focus group discussion is given.

Evaluating training programs, compiled by Donald L Kirkpatrick, Madison, Wisconsin American Society for Training and Development, 1975, 313p.
A collection of articles from the Journal of the American Society for Training and Development. The relevant articles are listed separately in this bibliography. See: Aves and Handy (1963); Belasco and Harrison (1969); Blumenfield (1966); Catalanello and Kirkpatrick (1968); Couch and Strother (1971); Crawford (1967); Fast (1974);

Gallegos and Phellan (1974); Gilbert, Campbell and Oliver (1963); Goodell (1969); Kayloe (1971); Kirkpatrick (Nov. 1959); Kirkpatrick (Dec. 1959); Kirkpatrick (Jan. 1960); Kirkpatrick (Feb. 1960); Kropp and Hankin (1962); Lawrie and Boringer (1971); Lerda and Cross (1962); Lester (1971); Morton and Adams (1961); Murdick (1960); Randall (1960); Reeves and Jensen (1972); Rose (1968); and Scott (1971).

Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 423p.

ED255762

Farley, Joanne et al, Reconceptualization of vocational education program evaluation, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985. 169p.

Information on vocational education as an area to be evaluated, existing evaluation methodologies and the theoretical basis for a proposed method called critical inquiry. Topics discussed include: the need for new directions in vocational education evaluation, technological treatment of evaluation, an alternative to an evaluation frame-work and suggestions from educational research.

Fast, Dorothy, "A new approach to quantifying training program effectiveness," Training and Development Journal, (USA), Sept. 1974: reprinted in:

Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 47-53.

ED232062

Finch, Curtis R, Review and synthesis of research in trade and industrial education, 3rd edition, Information series No.260, Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education, 1983. 60p.

Third edition of review and synthesis of trade and industrial (T&I) education research, mainly studies from 1977 to 1982, taken from ERIC et al. Aspects covered: philosophy and scope, student characteristics and needs, curriculum development, instruction and learning, teacher education, administration and evaluation.

Finch, Curtis R and Robert L McGough, Administering and Supervising Occupational Education, Englewood Cliffs, N.J., Prentice-Hall, 1982: xv 302p.

Covers the topics of: occupational education leadership, occupational education organization and structure, leadership processes, the leader as motivator, planning and decision making, program and institutional planning, planning for special groups, personnel development, development in the community, effecting educational change, instructional management support-services management, personnel management, labour relations management, fiscal management and conducting occupational education evaluation.

ED223937
Ford, J Kevin and Steven P Wroten, A content validity ratio approach to determine training needs, Paper presented at the Annual Convention of the American Psychological Association (Washington DC) 1982. 39p.
Two methodologies covering problem of deficiencies in training literature ie. evaluation of content validity of training programs and ways to redesign programs. Methodology establishing job relatedness of a police recruit training program. Methodology establishing link between training evaluation and training program reassessment.

Foxon, Marguerite, "Evaluation of training: the art of the impossible," Training Officer, v.22, n.5, May 1986: 133,134,136,137.
Describes evaluation as a thorny problem. Discusses the definition of evaluation, looks at the role and purpose of evaluation, the problem of measurement and how to develop a strategy.

Frank, Fredric D and Michael R Struth, "(The) self-assessment center," Training, v.21, n.3, March 1984: p.56- (3p).

Gilbert, Joseph, Henry G Campbell, and Albert E Oliver, "An evaluation of interdepartmental training with objective tests," Training Directors, May, 1963: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 56-59.

ED194829
Gill, Roger W, What is the content in "content validity"? Paper presented at the Annual Convention of the American Psychological Association, (Montreal, Quebec). 1980:12p.
Recognition of content validation as an alternative method to predictive validation in justifying work samples. Confusion over whether content validity should refer to the representativeness of the work sample in terms of tasks to be performed, or behavioural aspects of work performance. Use of in-basket exercise with lower-middle level managers is the work sample used.

Goad, Tom W, Delivering effective training, California: University Associates, 1982. 183p.
Identifies five phases of training; analyse, design, develop, conduct, evaluate, looks at each phase in detail, covering such topics as C.A.I. audio-visual aids, how to set training objectives and how to evaluate training.

Goldstein, I L, "The pursuit of internal and external validity in the evaluation of training programs," Public Personnel Management, Nov/Dec. 1979:416-427.

Goldstein, I L, "The pursuit of validity in the evaluation of training programs," Human Factors, v.20, n.2, 1978:131-144.

Goodell, Francis C, "Lest we trainers forget," Training and Development Journal, (USA), May 1969: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 263-264.
Intuitive judgment is not enough for evaluation.

Goslin, R C, "Defining contexts and procedures for effective evaluation of course programs," International Review of Administrative Sciences, v.42, 1976:59-67.

Greenan, J P and R D Amick, "Needs of vocational programs in teaching interpersonal skills," Journal of Studies in Technical Careers, v.8, n.1, 1986: 25-32.
While most vocational educators agree that interpersonal relations skills are important, there is a dearth of pertinent assessment strategies and procedures in secondary vocational preparation programmes. This study attempted to determine how and where assessment information could be used to improve the quality of vocational programmes. One of the results of the survey is the recommendation to develop a standardised instrument which could aid instructors in identifying areas in which students could improve, and in modifying the curriculum to achieve this goal.

Grenough, John L and Roy W Dixon, "Using 'utilization' to measure training results," Training, v.19, n.11, Nov 1982: 61- (3p).

Gripton, Jill and Alan Cowling, "Evaluating selection tests," Training Officer, v.22, n.8, Aug. 1986: 239-240,242.

Hamblin, Anthony C, Evaluation and control of training, New York: McGraw-Hill, 1974. 208p.
Concentrates on the "real world" problems of the training specialist, emphasising the integration of evaluation with training, and of training with management. Cites six methods of evaluation; the ultimate value (or cost-benefit) approach, the organisation development approach, the job-related approach, the learning-centred approach, the reactions-centred approach and the training-centred approach.

Harper, Eon, "Evaluation as a client service," Journal of European Industrial Training, v.9, n.4, 1985: 9-11.
This article considers the processes involved in designing an evaluation as a client service up to the stage of production and agreement of the evaluation schedule, which is a term coined by the author to coincide with the term "blueprint" used in architecture. The evaluator produces a designn, but does not necessarily carry out what has been designed in practice - the implementation of the evaluation can be left to others who follow the evaluation schedule. The evaluator may act as a consultant to this team during the implementation stage (like an architect does with builders) or may direct the evaluation, depending on client requirements.

Harper, Stephen C, "Adding purpose to performance reviews," Training and Development Journal, (USA), v.40, n.9, Sept 1986: 53-55.
The handling of performance reviews reflects how a company is managed and how its human resources are viewed by managers. The points made in this article can help you towards a more effective system.

Hawes, Jon M et al, "Evaluating corporate sales training programs," Training and Development Journal, (USA), v.36, n.11, Nov. 1982:44-46,48.
Sales training programs require continual evaluation. The authors present a conceptual model of the interrelationships of planning, training, evaluation, and modification (IPTEM) in corporate sales training programs.

Henderson, Richard I, Practical guide to performance appraisal, Reston, Virginia: Reston, 1984. 404p.
This book focuses on the actions an organisation must take to design, build and operate a performance appraisal program that is strong enough to withstand whatever load the organisation expects it to carry. Specifically investigated is the possibility of using performance appraisal for only one or two purposes, because the conflicts that arise between alternative uses can damage an appraisal program. Possible uses include: 1. Compensation-related decisions; 2. Training purposes; 3. Employee development purposes; 4. Analyzing and validating selection criteria; 5. Making employee movement decisions; 6. Organizational planning. The book considers strengths and weaknesses of various appraisal systems, human barriers to effective appraisal of performance, the interview process, and influences on job performance. Management-by-objectives is considered, as are objectives-setting and goal-setting processes. Problems that particular strategies can run into, are cited from the author's own experience.

Hilowitz, Janet, Tracer studies as tools for identifying training needs: an evaluation, Geneva, ILO Training policies discussion paper, 1982: 77p.

House, Ernest R, "Assumptions underlying evaluation models," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 45-64.

ED213827

Hull Daniel M et al, Development of safety and health instructional materials. Final report, Waco, Texas:Center for Occupational Research and Development Inc. 1982. 53p.
Design and development of pre-employment vocational training curricula incorporating safety and health instruction. Identification of training needs and specific content areas. Development, evaluation and revision of fifty instructional modules, and seven instructor resource guides for selection and implementation of training in specific safety and health areas.

Jones, Alan and Peter Whittaker, Testing industrial Skills, Epping, Essex: Gower, 1975. 195p.
A manual on how to develop and administer tests, how to assess test performance and administer tests and how to interpret and use test results. Includes many examples such as trainability, work sample, hands-on and hands-off tests and stipulates the importance of successful performance over what the individual thinks he or she can do. Assessment/evaluation take the form of marking, checklists, etc... as a way of testing an individual's performance.

Kane, Jeffrey S, "The Evaluation of organisational training programmes," Journal of European Training, v.5, n.6, 1976: whole issue, 290-338.
A general approach to selecting optimum designs for the evaluation of organisational training programmes is developed on the basis of an exposition of considerations entering into evaluations. This focuses on what emerges at the three stages of the process of arriving at the choice of design. The first stage involves the resolution of the purpose (formative or summative), focus (internal or external outcomes), and goal orientation (goal-centred or goal-free) of the evaluation. In the second stage the subset of evaluation designs that are feasible in light of organisational constraints are identified. The feasible design alternative with the highest net utility, as assessed through a procedure known as multi-attribute utility scaling that is applied in the third stage, is then selected for use. After a brief divergence for the purpose of setting forth the standards that should be strived for in the development or choice of criteria for training success, the paper concludes on a cautionary note concerning the evaluator's responsibility for engendering the legitimate use of his findings by policymakers (author abstract).

Kaye, Michael, "The myth of program evaluation," Training and Development in Australia, v.12, n.4, Dec. 1985:11.
It is not the program as such, but rather the objective which constitutes the subject-matter of evaluation. The program is a tool, it is not the tool that should be evaluated but the way in which it is used.

Kayloe, Alvin G, "A method for evaluating the effectiveness of technical training," Training and Development Journal, (USA), June 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 97-103.
A report from Air Force training with applications in other training.

Kelly, Charles M, "Reasonable performance appraisals," Training and Development Journal, (USA), v.38, n.1, Jan. 1984: 79-82.
Performance appraisals, no matter how well thought out, always seem to cause hard feelings between supervisors and employees, and management only makes the situation worse by pretending that the system functions perfectly. The solution seems to lie not in claiming too much for the system but in claiming a little less.

Kenney, John and Margaret Reid, Training interventions, London, Institute of Personnel Management, 1986: xiv 354p.
This book is based on and replaces the Institute of Personnel Management's publication Manpower Training and Development, (1972). Beginning with a consideration of the nature of training and its organizational role, it continues with the assessment of organization and individual needs, to the choice of strategy and the planning and evaluation of interventions. In the final chapter national interventions are considered as they affect both the organization and the individual.

King, Patricia, "How to prepare for a performance appraisal interview, Training and Development Journal, (USA), v.38, n.2, Feb 1984: 66-69.
Advice to the interviewer on planning an appraisal interview.

Kinlaw, Dennis C, "Performance-appraisal training: obstacles and opportunities," Training, v.21, n.1, Jan 1984: 43-44, 53.
The people who have to do the appraising often receive no training in performance appraisal. If they can write measurable standards, the standards are often trite. If they can develop meaningful standards they aren't able to make them measurable. Managers and supervisors need training in performance appraisal.

Kirkpatrick, Donald L, A practical guide for supervisory training and development, Reading, Massachusetts: Addison-Wesley, 1971: 182p.
Practical help for line managers as well as personnel and training directors with applications in industry, business, hospitals and government. Covers reasons and responsibility for training, needs analysis, methods and evaluation, program design and trainee selection. Case examples of effective programs are included.

Kirkpatrick, Donald L, "Evaluation," Chapter 16 in:
Training and development handbook: a guide to Human Resource Development, 3rd edition, New York, McGraw-Hill, 1987: 301-319.

Kirkpatrick, Donald L, "Performance appraisal: your questions answered," Training and Development Journal, (USA), v.40, n.5, May 1986: 68-71.
HRD professionals and managers alike are often foggy about performance appraisal procedures. Here are answers to some of their most common queries.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 1: Reaction," Journal of the ASTD, Nov. 1959: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 1-5 see also parts II through IV: 6-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 2: Learning," Journal of the ASTD, Dec. 1959: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 6-9. See also Part I and Parts 3 and 4 p.1-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 3: Behavior," Journal of the ASTD, Jan. 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 10-13. See also Parts 1, 2 and 4, p1-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 4: Results," Journal of the ASTD, Feb. 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 14-17. See also Parts 1-3, p1-13.

Knowles, Malcolm S, The modern practice of adult education: from pedagogy to andragogy, Chicago, Assocation Press, Follet, 1980: 400p.
See especially chapter 6: "Assessing Needs and Interests in Program Planning," chapter 7: "Defining Purposes and Objectives," and chapter 10: "Evaluating Comprehensive Programs. Chapter 2: "What is Modern Practice?" chapter 3: "What is the Role and Mission of the Adult Educator," and chapter 4: "What is Andragogy?" together give the theoretical background to the current changes in vocational education.

Komras, Henrietta, "Evaluating your training programs," Training and Development Journal, (USA), v.39, n.9, Sept. 1985: 87-88.
Practical advice on conducting evaluations, and some pitfalls to avoid.

Kropp, Russell P and Edward K Hankin, "Paper and pencil tests for evaluating instruction," Training Directors Journal, Nov. 1962: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 220-225.
Techniques for developing and using tests.

Laird, Dugan, Approaches to training and development, 2nd edition Reading, Massachusetts: Addison-Wesley, 1985.

Latham, Gary P and Kenneth N Wexley, Increasing productivity through performance appraisal, (Managing Human Resources Series). Reading, Massachusetts: Addison-Wesley, 1981. 175p.
Practical applications of the theoretical principles of goal setting,

reinforcement, role clarity and team building. Includes examples of appraisal systems such as the trait-oriented performance appraisal rating and behavioural observation/expectation scales.

Lawrie, J W and Clayton W Boringer, "Training needs assessment and training program evaluation," Training and Development Journal, (USA) Nov. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 291-294.
A training planning process with measurement at both input and output stages.

Lerda, Louis W and Leslie W Cross, "Performance oriented training - results measurement and follow-up," Training Directors Journal, Aug. 1962: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 210-215.

Lester, Richard I, "Criteria for evaluating training materials," Training and Development Journal, (USA), Aug. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 33-36.

Lott, O C, "Evaluation to reduce training costs," Training and Development Journal, (USA), Jan. 1967: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 244-246.

Lusher, Brian and Alan James, "Appraisals: changing directions," Journal of European Industrial Training, v.5, n.7, 1981: 12-15.
This article deals with experience over some three years in changing the role, content, format and procedures of a formal appraisal system in a large, international manufacturing company. It covers the reasons why change became necessary, the means by which the changes were agreed and implemented and an interim judgement of the effectiveness of the changes. The lessons learned by the specialists are stated.

ED255761

McKinney, Floyd L et al, Critical evaluation for vocational education, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985.24p.
Problems associated with efforts and ways of evaluating vocational education, such as disagreement over the role and function of vocational education, and insufficient consideration of the educational and community setting. Puts forward a new approach, critical evaluation, which directly addresses the issues raised by individuals in the local setting as being necessary for program change, and relies on quantative and qualitative data to develop action plans for program improvement.

Madaus, George F, Daniel L Stufflebeam, and Michael S Scriven, "Program evaluation: a historical view," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 3-22.

Mager, Robert F, Measuring instructional results, 2nd ed. Belmont, California: Pitman Learning, 1984. 166p.
Designed for people who want to know how well their instruction works and how to develop the basic tools to measure instructional results. Establishes that the measurement of success is accomplished mainly through the development of test items that match each objective in scope and intent. Concentrates on criterion-referenced evaluation methods to gauge performance.

Mager, Robert Frank, Troubleshooting the troubleshooting course, California: Pitman, 1982. 201p.
How to detect errors in what is taught and how it is taught in courses designed to teach equipment maintenance. Covers setting up a training programme for "troubleshooters" and includes flow diagrams and skill hierarchies.

Mager, Robert F and Peter Pipe, Analyzing Performance Problems, 1st edition, Belmont, California, Fearon Pitman, 1970, 109p.
Performance problems may be due to a lack of training or they may be caused by obstacles to correct performance that have nothing to do with a skill deficiency. The authors explain how to distinguish between the two types of performance problem. They ask if the person has the skill and is out of practice, or, whether performance of the skill is punishing, whether non-performance is rewarded, whether the person thinks the performance matters, or whether there are obstacles to the performance. Using the method described here the job analyst can distinguish between those situations where a training course will solve the problem, and those where such a course will not solve the problem.

Michalak, Donald F, "The neglected half of training," Training and Development Journal, (USA), v.35, n.5, May. 1981:22-28.
Evaluates the effects of various maintenance-of-behaviour activities as experienced by supervisors of an industrial organization. Includes lists of activities, conclusions, and recommendations.

Michalak, Donald F and Edwin G Yager, Making the training process work: A practical guide to better training programs, New York: Harper & Row, 1979. 152p.
Covers training responsibility, needs and task analysis, training objectives program design, conducting the training and evaluating it. The needs analysis section uses a hybrid model which distinguishes "can't do" problems, (lack of skill/knowledge), from "don't do" problems, (motivational). Six other techniques are also outlined. Three evaluation methods are used; control group, placebo training and random sampling.

Mirsberger, Gerald E, "The four crucial phases of evaluation," Training, Aug. 1974: 34-35.

Moore, Elizabeth Randall, "Competency-based training evaluation," Training and Development Journal, (USA), v.38, n.11, 1984: 92-94.
A before-and-after performance appraisal based on competence factors measures the impact of your training programs.

Morris, Michael, "The evaluation of training," Industrial and Commercial Training, Mar/Apr. 1984:9-16.

Morrissey, George L, Appraisal and development through objectives and results, Reading, Massachusetts: Addison-Wesley, 1972.

Morrisey, George L and William R Wellstead, "Supervisory Training CAN be measured 'objectively' on the job!", Training and Development Journal, (USA), June 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 151-153.

Morton, Anton S and Harold W Adams, "Weighted training grades: appearance and substance," Training Directors Journal, (USA), April 1961: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 197-201.
Did the weighting system do what it was designed to do? If not, why not?

Murdick, Robert G, "Measuring the profit in industry training programs," Training Directors Journal, April 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 182-185.

Nadler, Leonard, Designing training programs: the critical events model, Reading, Massachusetts: Addison-Wesley, 1982.
Presents the critical events model and discusses several other models. The CEM is an open model that continuously involves managers and supervisors in the design process. It and the book, moves through the "events" of identifying the organisation's needs, specifying job performance, identifying learner needs, determining objectives, building a curriculum, selecting a training method, obtaining training resources, conducting the training and finally, evaluating it.

ED269616

National Centre for Research in Vocational Education, Evaluate your instructional effectiveness, 2nd edition, Module D-6 of Category D-Instructional evaluation, Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 33p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, training teachers in how to evaluate their instructional effectiveness. Addressed in the individual learning experiences included in the module are the following topics: sources of feedback (teachers, state department of education supervisors and university faculty, oneself, and students); evaluation methods (observations, checklists, videotaping, assessments of student performance, and anecdotal records); and use of feedback results. Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED272748

National Centre for Research in Vocational Education, Evaluate your vocational program, 2nd edition, Module A-11 of Category A-Programme planning, development, and evaluation. Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 58p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, deals with developing a plan for evaluating a vocational program, performing a program evaluation, and developing a final evaluation report. Addressed in the individual learning experiences included in the module are the following topics: evaluating local vocational programs (the nature of program evaluation, key elements in a program evaluation model, and special evaluation concerns); development of and elements in a local program evaluation plan (description of the situation, statement of the evaluation philosophy and objectives, responsibilities, evaluation activities, limitations of the study, a schedule of activities, a statement of reporting procedures, and a summary of dissemination methods and plans for implementation); and preparation of the final report (presentation of data in text, tables, and figures; formulation of findings, conclusions, and recommendations; and distribution of the final report). Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED242898

National TAFE Clearinghouse, Initiatives in technical and further education: Number 7, Adelaide, Australia: National TAFE Clearinghouse, 1984. 52p.

Compilation of 137 document abstracts providing technical and further education, (TAFE) materials for teachers, counsellors, researchers and administrators. Types included: research and technical reports, evaluation studies, curriculum materials and bibliographies. Information on TAFE Clearinghouse system and its use.

ED255717

New York State Division for Youth, Competency-based instruction: A guide in developing youth employment competencies, Albany, New York: New York State Division for Youth, 1984. 71p.
An introduction to the development of performance standards for youth employment and training programming. Topics covered include; roles and responsibilities under the Job Training Partnership Act, the nature of competency-based programs, examples of competencies, job market studies and methods of assessment.

ED248342

New York State Education Department, Training and economic development: the impact of industry-specific training on business and the economy of New York State, Albany, New York: New York State Education Department. Office of Occupational and Continuing Education, 1984. 77p.
A study examined about 130 projects, which were part of New York's Short-Term Program for Economic Development, to determine their effectiveness. It was concluded that the program resulted in increases in productivity and quality or quantity of goods and services for the participating companies.

New Zealand Department of Labour, Industrial Training Service, Planning and evaluating a training programme. New Zealand Department of Labour, 1983. 19p.

Newby, A C and P Bramley, "The evaluation of training part II: the organisational context," Journal of European Industrial Training, v.8, n.7, 1984: 17-21.
(See also Bramley and Newby "The Evaluation of training part I: clarifying the concept,").
To argue that evaluation of training is too expensive and too much trouble is an argument no different in kind from, and no more reasonable than opposition to the use of management accounting in determining future manufacturing capacity or level of service provision. The only significant difference is that accountants have been at their work longer and have developed tools and language appropriate to financial analysis. Trainers, in contrast, have largely avoided the challenge of developing an appropriate language for training analysis. The consequence has been that, by default, training is liable to be assessed only in the language of financial control.

O'Connor, Terence, "How to set up, run and evaluate a training program based on behavior modeling principles," Training, v.16, n.1, Jan. 1979: 64- (4p).
A course based on the concept of learning by imitating the behavior of models. Participants' performances are video taped. 35 months later graduates of the course are again video taped while doing a role play exercise, and the two video tapes are compared.

Patrick, J and A K Moore, "Development and reliability of a job analysis technique," Journal of Occupational Psychology, v.58, 1985:149-158.
Examines reliability in the development of a modified British version of the Position Analysis Questionnaire, (PAQ), known as the Job Structure Profile (JSP).

Patrick, Peggy Winchell, Training effectiveness evaluation, presented at the National Conference on Achieving Professional Excellence, 1985, Little Rock, Arkansas, 28p.
The concept of training effectiveness evaluation should not be confused with training evaluation per se. It is a more comprehensive term which encompasses training evaluation. Training effectiveness evaluation addresses the following questions: 1. Does the training achieve the purpose for which it was planned? 2. Does the training improve job performance? 3. Are performance objectives stated and tested? 4. Is the instructional process effective? 5. Are individual needs considered in training? This paper explains what the concept is, why it is used, and how to conduct training effectiveness evaluation. Paper copies of transparencies used with the original presentation are appended.

Pearlman, K et al, "Validity generalisation results for tests used to predict job proficiency and training success in clerical occupations," Journal of Applied Psychology, v.65, n.4, 1980: 373-406.

Performance Assessment, edited by Ronald A Berk, Joh Baltimore + London, Johns Hopkins University Press, 1986: 544p.

Performance testing: issues facing vocational education, edited by Janet E Spirer, Columbus, Ohio, National Center for Research in Vocational Education, (c.198?) 193p.
This handbook deals with issues related to evaluation of publically funded training programmes. It consists of commissioned papers and reactions to papers on the four types of issue that must be considered before a performance test can be constructed. These issues include: philosophical issues, technical issues, legal issues and implementation issues. Two papers discuss the implications for vocational education of the contents of all the papers. Performance testing is emphasized as an evaluation tool. A multidisciplinary approach is taken.

Phillips, Jack J, Handbook of training evaluation and measurement methods, Houston, Gulf Publishing, 1983: 316p.
This handbook equips human resource development (HRD) professionals with the tools necessary to evaluate their programs. Presented from a practical viewpoint, it is based on actual experiences, and each technique or idea has been tested and proven. The many examples are taken from a variety of settings. In Part I the importance of measurement is explained. Part II describes preparation for evaluation; Part III describes evaluation methods and mechanics; and Part IV explains the factors that affect program results. How to determine the costs of HRD programs is also covered.

Posavac, Emil J and Raymond G Carey, Program evaluation: methods and case studies, 2nd edition, Englewood Cliffs, N.J., Prentice-Hall: 1985.

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Poulet, Roger, "Training process effectiveness," Industrial and Commercial Training, v.18, n.1, Jan/Feb 1986: 10-13.
Examples given are in management training, but the points made are relevant to other types of training as well. The three main elements of effectiveness are (1) accurate identification of training needs, (2) accurate selection of participants, and (3) appropriate course content.

ED208176
Prien, Erich P, Symposium comments and a perspective on job analysis, Paper presented at the Annual Meeting of the American Psychological Association, (Los Angeles, CA), 1981. 14p.
Perspective on job analysis and related comments on research at a symposium. Discusses two questions, what should be done? and how well was it done? - the Stage I and II evaluation operations.

Province of British Columbia Ministry of Education, DACUM.4. From objectives to instruction, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 14p.
The fourth of a series of four books on the DACUM process. Looks at analysing the objectives, selecting instructional techniques, choosing instructional resources, evaluation, how to instruct adults and provincial resources (in British Columbia).

Pryor, Roger, "A fresh approach to performance appraisal," Personnel Management, June 1985: 37-39.
It is not the design of performance appraisal forms, or even the system used, that governs the success or failure of the exercise. What matters is the attitude adopted by managers.

Quinn, Susan and Shelley Karp, "Developing an objective evaluation tool," Training and Development Journal, (USA), v.40, n.5, May 1986: 90-92.
Two training program developers show you how they measure program effectiveness. They discuss what to measure and how, how to formulate questions, how to assess questionnaire validity and response validity, and which methods should be used to analyze the data.

Rabey, Gordon P, Training: a practical approach to job training, Wellington, NZ: Paige Productions, 1980.
Defines the function of training, describes its operations from training needs analysis through costs and budgets, how people learn, evaluation of training, to retraining of personnel and the training of training officers.

Rae, Leslie, How to measure training effectiveness, Aldershot, Hants, Gower 1986: x, 151p.
This book sets out to suggest ways in which any form of training can be assessed for effectiveness and value. It covers the whole training process from the selection and planning of a training event through to the validation and testing of its outcome in both the short and the long term. The author summarizes the various approaches and provides practical instruments based on his own experience.

Rae, Leslie W, "How valid is validation?", Industrial and Commercial Training, Jan/Feb 1985:15-20.
Discuss definitions of both validation and evaluation, and the difference between them. Discusses problems with pre-testing and post-testing, and suggests a 3-Test approach. Participants are not only pre-tested and post-tested, but also asked to assess their skills as they were at the start of the training, but knowing what they now know about themselves and their skills at the end of training.

RAF School of Education. Resources Development Unit, A guide to the design of learning packages, RAF School of Education. Resources Development Unit, (?) 57p.
This guide has been produced to assist education officers who may be called upon to design learning packages. It is assumed that these education officers will be subject-matter experts and experienced in the teaching of the subject. Having studied the guide you will be able to: 1. define a learning objective, 2. write learning objectives, 3. identify objectives relevant to your target population, 4. arrange the objectives in a logical learning sequence, 5. list the types of tests which may be used, 6. construct appropriate tests, 7. define a learning resource, 8. list the types of learning resources available, 9. list the problems which may be encountered in the production of learning resources, 10. select appropriate learning resources for specific objectives, 11. define a learning package, 12. state the weaknesses of an unvalidated package, 13. list the methods of validation.

Randall, Lyman K, "Evaluation: a training dilemma," Training Directors Journal, May 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 186-190.
Do you evaluate to refine?... or to survive?

Reeves, Elton T and Michael J Jensen, "Effectiveness of program evaluation," Training and Development Journal, (USA), Jan 1972: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 42-46.

Richards, R C, "How to design an objective performance-evaluation system," Training, v.21, n.3, March 1984: 35- (4p).

Robinson, Kenneth R, A handbook of training management, 2nd edition, London, Kogan Page, 1985: 266p.
This book covers training objectives; training needs analysis; planning the overall programme; aspects of the training process including learning and behaviour as well as the methods and techniques of training. Also covered are the evaluation and validation techniques; training resources; and influences on the training function. Some areas of recent development in training are mentioned.

Rose, Homer C, "A plan for training evaluation," Training and Development Journal, (USA), May 1968: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 253-257.
Describes the elements involved in the evaluation of the way the course was planned, the evaluation of the administration and the evaluation of the training.

Rosenberg, Marc J and William Smitley, "Constructing tests that work," Training, v.20, n.9, Sept. 1983: 41- (4p).

Rossi, Peter H and Howard E Freeman, Evaluation: a systematic approach, 3rd edition, Beverly Hills, Sage, 1985:

Rothwell, William J, "How to conduct a real performance audit," Training, v.21, n.6, June 1984: 45, 47-49.

Salinger, Ruth D and Basil S Deming, "Practical strategies for evaluating training," Training and Development Journal, (USA), v.36, n.8, 1982:20-28.
Discussion of six evaluation strategies. Focus more on executive development programs.

Scott, Ted, "Supervisor's evaluation of staff development activities," Training and Development Journal, (USA), Sept. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 283-285.
A basis for measuring improvement in employee performance.

Shrinkfield, Anthony J, "Designing evaluations of educational and social progress by Lee J Cronbach: a synopsis," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 357-379.

Smith, B J and B L Delahaye, How to be an effective trainer, New York, John Wiley & Sons, 1983: 306p.

ED255636
Smith, Ester Gottlieb and Nancy Holt, State-of-the-art review of vocational education evaluation: state evaluation procedures and practices, Belmont, Massachusetts:CRC Education and Human Development Inc. 1979. 54p.
Report of current state practices and procedures in light of the 1976 Vocational Education Act Amendments. The survey found that many problems regarding evaluation existed, such as insufficient funds to

conduct or monitor evaluations, insufficient trained staff to design and use evaluation procedures, lack of access to information processing facilities, lack of clarity about the intent of the law, and inaccuracy of reporting, leading to incorrect assessment about evaluation.

Smith, Martin E, "Evaluating training operations and programs," Training and Development Journal, (USA), v.34, n.10, 1980:70-78.
Presents a systems model and a planning guide for evaluation. Model formulated by Brethoneer and Rummler, (1976).

Steinmetz, Andres, "The discrepancy evaluation model," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 79-99.

Stufflebeam, Daniel L and George F Madaus, "The standards for evaluation of educational programs, projects, and materials: A description and summary," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 394-404.

Stufflebeam, Daniel L, and William J Webster, "An analysis of alternative approaches to evaluation," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 23-43.

ED121969
Swanson, R A and S A Sawzin, Industrial training research project, Denver, Colorado:Johns-Manville Corporation, 197[illegible] 184p.
An experimental comparison of structured and unstructured training of semi-skilled production workers using representative trainees, two training programs, and evaluation of product quality, worker competence, cost effectiveness etc. Results showed that structured training took less time, produced a higher level of competence, lower production losses and a higher percentage of production problem solving.

Swezey, Robert W, Individual performance assessment: an approach to criterion-referenced test development. Reston, Virginia: Reston, 1981. 177p.
Looks at criterion-referenced measurement as a performance assessment method. The difference between criterion-referenced and norm-referenced measurement is stressed: the former evaluates mastering of a given skill or knowledge or set of objectives while the latter merely evaluates performance relative to that of comparable individuals.

Swierczek, Frederic William and Lynne Carmichael, "The quantity and quality of evaluating training," Training and Development Journal, (USA), v.39, n.1, Jan. 1985: 95-98.
Report on a case-study of training, with a six month follow up.

Technology transfer: A project guide for international HRD, edited by Agnes Reynolds, Boston, International Human Resources Development Corporation, 1984: 145p.
Defines Human Resources Development (HRD). Contains a section on program design for trainees from third world countries. Gives information on planning, needs assessment, setting objectives, design, implementation and evaluation. Computer based learning is also included. A section on training supervisors uses Leonard Nadler's Critical Events Model to construct a program. (See also Nadler, 1982).

The performance appraisal sourcebook, edited by Lloyd S Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1982: 190p.
Begins by defining performance appraisal then defines performance and now to develop performance criteria. The third section covers job analysis, types of performance measures, and choosing the right method. This is followed by how to carry out performance appraisal, how to train the raters giving performance feedback, and using appraisal for human resource management. There are numerous examples of tests and methods such as behaviorally anchored rating scales (BARS) managing by objectives (MBO) relative rating systems and graphic rating scales.

The training and development sourcebook, edited by Lloyd Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1983: 381p.
A handbook which deals with designing, implementing and evaluating training and development, to improve individual and organisational performance. Includes readings, checklists, questionnaires, models, and methods for analysis that have proved useful in consulting and teaching. Contains a thorough section on training needs analysis and outlines five different methods.

Tobin, Helen M, Pat S Yoder Wise, and Peggy K Hull, The Process of Staff Development: Components for Change, 2nd edition, St Louis, C V Mosby, 1979: 248p.
Aimed at trainers and administrators of nursing services, this book covers organization and administration, roles and relationships, budgets, philosophy purpose and goals, adult learning, changing behavior, needs assessment, designing and implementing the program, strategies to facilitate learning, evaluation and future directions.

ED209561
Training in the Human Services Vol. II: Papers presented at the fall conference on training in the human services, edited by Richard L Edwards and Thomas D Morton. Atlanta, Georgia, Tennessee University, Knoxville, Oct 16-18, 1978: 279p.
Needs assessment, program design, and evaluation are presented in a series of 12 papers for trainers, educators, and practitioners

interested in training for human service practice. Needs assessment is discussed in terms of direct interpersonal approaches; indirect interpersonal approaches; and social indicator approaches. Weaknesses of needs assessment are identified and discussed in terms of lack of clear cut definitions, interpreting and weighting data collected, lack of well defined training competency hierarchies, and the difficulty of extracting useful information on the existing knowledge and sophistication within the target population. Included in this section are two papers describing needs assessments undertaken in a mental health center and with service providers in gerontology. Program design is reviewed with specific attention paid to size, purpose, economy and the sociopolitical environment. Seven papers follow that report on large scale training programs, a program that utilizes Telecommunication Satellites, a state-wide inservice program for social workers, a rural rape crisis program, a community college-based program and a description on how to use information science in design. A background to the evaluation of training programs in human services is provided. Included in this section are three papers that address issues related to evaluation of training effectiveness.

ED201720

Training of trainers, edited by Claudette D Chmura, Washington: National Training and Development Service for State and Local Government, 1981, 116p.

Curriculum package for public sector trainers aimed at improving skills in the assessment of training needs, design and implementation of programmes, and evaluation of training programmes. Can be used for private study or as part of a 5 day workshop. Contains 4 leader's guides and 4 participants' sourcebooks.

"Training today: the trouble with performance appraisal," Training, v.21, n.4, April 1984: 91- (2p).

Trattner, Marvin H, "Synthetic validity and its application to the uniform guidelines validation requirements," Personnel Psychology, v.35, n.2, Summer 1982:383-397.

The Uniform Guidelines for Employee Selection Procedures created a need for efficient validation methods that can be generalised to a class of occupations. One method currently authorised by the Guidelines is synthetic validation. Describes approaches to synthetic validity. Recommends Primoff's J-Coefficient approach.

Turrell, M, Training analysis: a guide to recognising training needs, Plymouth Macdonald and Evans, 1980.

Tyler, Ralph W, "A rationale for program evaluation," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 67-78.

Tyson, Lynn A, and Herman Birnbrauer, "High quality evaluation," Training and Development Journal, (USA), v.39, n.9, 1985:33-37.
Gives general information on what the ideal evaluation program should have, and demonstrates the use of checklists as feedback instruments to avoid omission and duplication. There are two checklists; one for design and development and one for learning conditions.

Ulschak, F L, Human Resource Development: the theory and practice of needs assessment, Reston, Va. Reston Publishing, 1983.
Part I covers the Training Cycle overview, discussion of the needs assessment environment and criteria for selection of methods. Part II covers needs assessment methods, including the generic methods, nominal grouping, the delphi technique, the critical incident technique, competency-based management, assessment centres, performance appraisal, assessment of training needs for career development, and exit interviews. Part III covers Planning and Evaluation.

van Maanen, John, The process of program evaluation, a guide for managers, Washington D.C.: National Training and Development Service Press, 1973.

ED255724
Watson, A, Measuring educational achievement in TAFE. Diploma of Teaching, (Technical). Directed study booklet, Haymarket, Sydney:Sydney College of Advanced Education, Institute of Technical and Adult Teacher Education, 1984. 72p.
A booklet designed to help teacher education students identify and explain certain basic principles of educational measurement and apply them to the development of a valid reliable assessment program. There are five topics; an overview of adult achievement measurement in TAFE, the two principles of reliability and validity, how to plan an assessment program, construction of tests and treatment of test results.

Wentling, Tim L, Evaluating occupational and training programs, 2nd ed. Boston: Allyn and Bacon, 1980.

ED236406
Wichowski, Chester P, Researchable problems and implications for T and I education drawn from the Vocational Education Study, Paper presented at the American Vocational Association Convention, (Anaheim, California), 1983. 21p.
Findings from a survey to determine researchable problems or implications for T and I education. Sections and frequency of responses; distribution of funds (25), programs and services for special needs students, (22), overcome sex bias and stereotyping, (21), planning improvement, (20), extending and improving programs, (16), and strengthening evaluations, (17).

ED226171

Wichowski, Chester and Gordon McMahon, Trends and issues in trade and industrial education, Paper presented at the American Vocational Association Convention, (New Orleans), 1980. 26p.
Findings from a survey of state and territorial level supervisors of T and I education. Eleven categories of trend and issue are; advisory boards, articulation curriculum, delivery, follow up/placement/evaluation, funding, guidance and counselling, special needs students, program planning and access, sex-role equity and teacher preparation and upgrading.

Wittingslow, Dr George E, "Making training effectiveness work," Training and Development in Australia, v.13, n.4, Dec. 1986: 8-9.
This paper discusses the problems of definition, setting criteria, and measuring the effectiveness of evaluating training outcomes. Using single case methodology and a new research instrument (SBQ) with traditional measures, it was possible to measure the effectiveness of the particular training course at all four levels of the Kirkpatrick model.

Wolansky, W D "Evaluation of employer sponsored skill training and development programs," Canadian Vocational Journal, v.20, n.4 - v.21, n.1, 1985: 21-25.
This review article describes, and in places mildly criticises, the central findings of several major approaches to evaluatory methodologies and their main principles. The central points of agreement reached by the reviewer are that most trainers recognise that it is critical to determine very accurately the current job description of each employee if needs analysis is to yield meaningful data for planning training; that it is necessary to maintain an active file of performance including strengths and weaknesses observed and discussed over time; specify realistic performance expectations and standards to be met as a result of identified training needs; determine ratings based on observable defined behaviours rather than character traits; communicate appraisals to subordinates in face-to-face scheduled meetings. The review concludes with the assertion that there is no substitute for experience and practice in helping individuals to become critical self-evaluators.

Woodington, Donald, "Some impressions of the evaluation of training in industry," Phi Delta Kappan, v.61, n.5, Jan. 1980:326-328.
The author gives five impressions on the state of evaluation of training programs in industry. He takes the position that evaluation is given short shrift.

Zemke, Ron, "Using testing instruments in your training effort," Training, v.19, n.11, Nov. 1982: 30- (6p).

Zemke, Ron and Thomas Kramlinger. Figuring things out: a trainer's guide to needs and task analysis. Reading, Massachusetts: Addison-Wesley, 1982: 348p.
A comprehensive manual on the various types of needs and task analyses. Describes the techniques and tactics of the way the authors, in their

own consulting work, approach the analysis of human performance problems. A first step is to decide whether the solution is training or something else. Section I describes the authors' strategic and tactical approach. Section II covers observation methods of task analysis. Section III covers other methods including (1) focus group discussions, (2) one-to-one interviews, and (3) telephone interviews. Section IV covers more methods (1) the critical incident technique, (2) concensus groups, and (3) surveys and questionnaires. Section V describes the analysis of information gathered, including making hypotheses about what the performance problem is, and choosing the most opportune locus for intervention to solve the problem. Also described are fault tree analysis and how to use learning hierarchies in task analysis. Section VI gives guidelines on when to use what method for both organisational and technical criteria, and how to select the right technique for a particular problem. Section VII covers how to report results to management. Appendix A is a reprint of Gagne's speech on task analysis, and Appendix B is Flanagan's original article on the critical incident technique.

Zenger, J H and K Harris, "Assessing training results: It's time to take the plunge!", Training and Development Journal, (USA), v.36, n.1, 1982: 10-16.

The author's experience confirms that adequate research technology exists for assessing training results. The research is not expensive compared to the total training expenditure. Suggestions are made for good research design. Results must be cautiously interpreted. A defined percentage of the total training budget should be allocated to evaluation.

TESTS

This section includes: SELECTION TESTS
TRAINABILITY TESTS
BEHAVIOURAL TESTS
(which are also called Work Sample Tests)

Performance Appraisal is covered in the previous section under Evaluation and Validation of Training.

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Anderson, Bill, Report on the progress made and problems encountered in introducing Trainability Testing into the London Regional Skillcentres, Sheffield, Training Division, Manpower Services Commission, Moorfoot, September 1983. 26p.
An account of the introduction of trainability testing to regional skillcentres in the London region. It concludes that trainability testing based on the London regional approach could be introduced nationally into skillcentres provided that adequate resourcing is available. The London projects should be continued to facilitate the development of new tests and to act as a proving ground for the wider role which trainability testing may play in a national strategy for selection.

Brugnoli, George A, "Racial bias in the use of work samples for personnel selection," Dissertation Abstracts International, (B), v.37, n.6, 1976: 3128.

ED199270

Cantwell, Z M, Performance tests as dependent variable measures in personnel evaluation, Paper presented at the Annual Meeting of the Evaluation Network Conference, (Memphis), 1980. 29p.
Fair, valid and reliable measurement of dependent variables is important in personnel evaluation studies. Three categories of performances tests - job or work sample tests, situational tests and job earning/trainability tests - are being used with increasing frequency to measure personnel evaluation successfully. They seem to be fair measures when individuals are classified by race, age or sex.

"Careers topics: behavioural consistency," Education and Training, v.27, n.9, Oct. 1985: p277.
Newsbrief on "biodata." It is a form of testing which takes as its central axiom the assumption that the best available indication of how a person will behave in the future is the way he or she has behaved in the past.

Casey, John J, "Trainability diagnosis: a humanistic approach to selection," Training and Development Journal, (USA), v.38, n.12, Dec. 1984: 89-91.
Making the best match between job and job applicant has never been easy, and accommodating special union rules makes selection methods more difficult. The trainability diagnosis approach described here not only meets with union acceptance, it improves selection decisions.

Chapman, Kevin, Selecting and training good staff, Palmerston North, N.Z.: Dunmore Press, 1984.

Cohen, Stephen L and H Frank Gump, "Using simulations to improve selection decisions," Training and Development Journal (USA), v.38, n.12, Dec. 1984: 85-88.
Short job simulations make interviews more productive.

Dailey, Charles A and Ann M Madsen, How to evaluate people in business: the track-record method of making correct judgements, New York/London: McGraw-Hill, 1980. 225p.

Department of Employment and Youth Affairs, Recruitment and selection bibliography, 1970-1979, Melbourne: Department of Employment and Youth Affairs, Central Office Library, 1979: 23p.
Covers aspects of recruitment and selection such as screening interviews, cost effective recruitment, trainability testing, reference checking and non-verbal communication in interviews.

Downs, Sylvia, Testing Trainability, England, draft manuscript (to be published by NFER-NELSON) 1984: 40p.
Lists 20 ways of recognising a trainability test, and reports the results of validation of trainability tests. Discusses the pros and cons of using trainability tests. Illustrated example of trainability test for forklift drivers. Describes how to validate a trainability test. Describes how applicants use trainability tests for self assessment, i.e. "job-tasters to see how they like the job.

Downs, Sylvia, Trainability testing: a practical approach to selection, London, Her Majesty's Stationery Office, Manpower Services Commission, Industrial Training Research Unit (Cambridge) 1977: 32p.
Trainability tests can be used to help screen job applicants. They can be used for young applicants and for older applicants who are applying for retraining. Advantages and disadvantages of trainability tests are

discussed. Chapter II explains how to construct a trainability test, how to validate it, and how to administer it. This includes how to analyse the job, how to select the task, how to decide on acceptable performance, how to rate the results and how to train the instructors who will administer the test.

ED229718

Ekstrom, Ruth B, Measuring adult womens' job relevant life experience learning, Princeton, New Jersey: Educational Testing Service, 1982. 33p.

Part of the Project HAVE skills Program designed to develop career counselling for women re-entering the workforce after raising families. Questionnaires designed around 524 Skills such as consumer economics and communications were developed to identify job-related skills acquired by women in their absence from the paid labor force.

ED216266

Ekstrom, Ruth B, Project HAVE Skills: a program for matching women and jobs. Employer's guide, Princeton. New Jersey: Educational Testing Service, 1981. 131p.

This employer's guide is part of the HAVE (Homemaking and Volunteer Experience) Skills material designed to help women identify job-relevant skills learnt as homemakers and volunteers, and to match the skill with paid jobs. Identification and assessment of skills, the development of the survey and the use of the HAVE skills chart with competency statements are discussed.

ED194829

Gill, Roger W, What is the content in "content validity"? Paper presented at the Annual Convention of the American Psychological Association, (Montreal, Quebec). 1980:12p.

Recognition of content validation as an alternative method to predictive validation in justifying work samples. Confusion over whether content validity should refer to the representativeness of the work sample in terms of tasks to be performed, or behavioural aspects of work performance. Use of in-basket exercise with lower-middle level managers is the work sample used.

Gordon, Alan, How to choose school leavers for jobs, Institute of Manpower Studies No.1. Aldershot, Hants: (UK) Gower, 1984.

Grede, John, "Employability profile," Journal of Studies in Technical Careers, v.5, n.3, Summer 1983:233-238.

Describes an employability profile that lists test scores on some competencies useful to employers. It is presented as a one-page profile form and can be used as a record by youth and adults looking for entry-level jobs.

Gripton, Jill and Alan Cowling, "Evaluating selection tests," Training Officer, v.22, n.8, Aug. 1986: 239-240,242.

ED192165

Harlan, Anne, George Klemp and Mary Lou Schaalman, The assessment of occupational competence. I. Competence assessment in personnel selection: current practices and trends, Boston:McBer and Co., 1980: 191p.
One of seven sections of a report examining the assessment of occupational competence. Presents competence assessment as it is defined in practice by selection techniques currently used by employers. Questions such as "Do employers select on the basis of the competencies they desire in job applicants?" are asked.

Industrial Training Research Unit, Trainability assessments: Electronic assemblers, Cambridge: Industrial Training Research Unit, (1974?). 17p.
Deals with trainability testing research done at Pye Telecommunications Limited on an electronic wiring task. Covers the exercise from the test's construction to its validation both for training and on the job. Appendices contain the test itself and details of the assessment procedure.

Industrial Training Research Unit, Trainability tests: a practitioner's guide, Cambridge: Industrial Training Research Unit, 1977.

Jones, Alan and Peter Whittaker, Testing industrial Skills, Epping, Essex: Gower, 1975. 195p.
A manual on how to develop and administer tests, how to assess test performance and administer tests and how to interpret and use test results. Includes many examples such as trainability, work sample, hands-on and hands-off tests and stipulates the importance of successful performance over what the individual thinks he or she can do. Assessment/evaluation take the form of marking, checklists, etc... as a way of testing an individual's performance.

Kilcourse, R, "Trainability testing as an aid to selection," Personnel Management, v.10, n.5, 1978:33-35, 43.
Examines some of the advantages and limitations of trainability testing in recruitment for manual work.

Killcross, M C and W T G Bates, Selecting the younger trainee, London: H.M.S.O., 1975. 26p.
Training Information Paper 8 from the Training Services Agency, this booklet looks at the basis for trainee selection, (ie: the available information on a candidate), how to use this information and typical selection studies and procedures, then assesses various selection procedures.

ED206646

Lockwood, Robert E, A procedure to select and rank qualified applicants using perceived item difficulty and perceived item relevance, Paper presented at the Annual Meeting of the National Council on Measurement in Education, (Los Angeles), 1981. 16p.
Proposal of a two stage cutting score procedure to replace traditional minimum competency testing in personnel selection. Only a subset of

the usual test items assessing job related skills are used to determine the cutting score and identify qualified applicants. A high number of essential and useful items identified indicates a qualified applicant. A rational methodology for producing an eligibility list is produced.

Manpower Services Commission, Training Services Division, Trainability Testing, (People and Work series) London: Manpower Services Commission, Training Services Division, 1979.

Mindel, Richard, Final report of an experiment to examine the use of trainability tests in skillcentres, London, Manpower Services Commission, Psychological Services, 1979: 54p.

Trainability tests were well received by management, staff and trainees at Leicester Skillcentre. Such tests are now available in at least 5 trades for use as predictors of an individual's success on training courses. Also the research has highlighted a new role for using trainability tests (work sample tests) in a guidance capacity. They give individuals a taster of their trade at an early stage, which helps when choice of occupation is made.

Minimum competency achievement testing: models, measures and consequences, edited by Richard M Jaeger and Carol K Tittle, California, McCutchan, 1980.

ED254744

Mitchell, Gary and Ralph Carlson, Identification of electronics competencies in vocational programs: Final report, Spokane, Washington: Spokane Community College, 1984. 21p.

A project conducted to identify the electronics competencies required of entry-level employees in several occupations, using the survey method. Evaluation of survey data suggested that various vocational disciplines might be separated into two categories - servicing ad non-servicing, depending on whether the employee is required to analyse, maintain or repair electronics-based equipment. A list of the technology requirement ratings of various occupations is included.

ED253645

Moock, Lynn D, Electronics/robotics displaced workers retraining and technician upgrade training. Ohlone College Investment in People Project 1983-1984. Evaluation report, California: Ohlone College, 1984. 47p.

Applying the user-focussed process of evaluation, an evaluator studied the effectiveness of the displaced worker entry-level and the upgrade components of the electronics/robotics training program. Those involved were surveyed, interviewed and given questionnaires. Of the twenty eight displaced workers who began training, eighteen completed the program. The assessment process provided a good indicator of who could succeed. Outcomes of the evaluation are discussed.

Mottram, Roger Douglas, Selecting apprentices: some problems and implications for selection and training, (A follow-up study in the electricity supply industry). Cambridge: Cambridge University/London: University College, Industry Training Research Units, 1977. 19p.

ED255716

New York State Division for Youth, Vocational assessment instruments reference guide. A review of interest aptitude and pre-employment/job readiness tests, Albany, New York: New York State Division for Youth, 1985. 250p.

This guide is designed to serve as a reference to assist providers of Job Training Partnership Act-funded programs in selecting appropriate interest, aptitude, and pre-employment and job readiness tests. Descriptions of 53 interest tests, 38 aptitude tests, and 37 pre-employment and job readiness tests are provided. Each description contains information pertaining to some or all of the following: year of publication, target population, reading level, scoring procedures, time required to use the instrument, instrument format, measurement scales, comments from technical reviews, and data concerning test validity and reliability. A list of publishers' addresses and a bibliography conclude the guide.

Pearlman, K et al, "Validity generalisation results for tests used to predict job proficiency and training success in clerical occupations," Journal of Applied Psychology, v.65, n.4, 1980: 373-406.

People and work: trainability testing, London, Manpower Services Commission, Training Services Division, 1979: 26p. (People and Work practical guide series).

Trainability tests involve asking an applicant to perform a specific job-related test in which he or she has been given prior instruction. The booklet describes how to design a trainability test, how to apply it, and how to validate the results using statistics. Examples of tests are given.

Rawling, K, "Selection tests: battery of six tests for engineers," Personnel Management, v.16, n.12, 1984:51.

Description of scope and potential uses of the Engineering Selection Test Battery, (ESTB), of six tests, which takes two and three quarter hours to administer and fifteen minutes to score. Score profiles can be used to test suitability for an engineering or technical career, and indicate suitability for broad groups of subjects.

ED224884

San Mateo Office of Education. Entry standards assessments, Redwood City, California. San Mateo Office of Education, 1982: 140p.

Skill checks containing materials to help students and counsellors determine whether students have the maths, reading and writing abilities needed to take part in various vocational education courses for jobs such as clerical worker, landscape gardener, data entry operator and hospital service worker. Assessment exercises include completing forms, making calculations and reading meters.

Savage, Adrian, "Using past behaviour to predict performance," Personnel Management, August 1985: 51.
A look at scored biographical data or 'Biodata' as it is more commonly known, as part of the selection process, particularly where the number of job applicants is high.

Saville and Holdsworth Ltd, "Occupational Personality Questionnaires," Training Officer, v.21, n.5, May 1985: 140-142.
Saville and Holdworth Ltd are at the forefront of occupational test development in the UK. They develop and publish a wide range of occupational tests. The company has thirteen full-time psychologists running projects in industry ranging from job analysis and assessment centre implementation, to interview training and training in the use of aptitude tests and personality questionnaires. This article discusses the 1984 developed Occupational Personality Questionnaires (OPQ). Discussing their field of application and validity.

ED234095
Siegel, A I, Trainability testing for Navy selection and classification, Wayne, Pennsylvania: Applied Psychological Services Inc. 1983. 49p.
Third report on the use of a technical classification assessment center, (TCAC) for evaluating general detail (GENDET), personnel in the Navy. It presents further development and test modification covered in the first two reports and validates their usefulness for assigning GENDETS as seamen, firemen and airmen.

Smith, Judson, "Selecting and nuturing only your best," Training, v.15, n.9, Sept. 1978: p.21- (3p).

Smith, Mike and Dave George, "Assessment centres: a test and taste for job applicants," Management, July 1986: 26-27.
Few "Management" articles have created as much feedback as the attack on personality tests by Massey University psychologists Mike Smith and Dave George (see below). In this article they look at what they consider to be a better selection method than either personality tests or interviews - assessment centres. These see candidates doing work samples over a period of two or three days and candidates and employers meeting to discuss the job.

Smith, Mike and Dave George, "Stupid personality tests: who's conning who?", Management, March 1986: 50.
Personality tests are widely used in managerial selection in New Zealand. But are they an accurate measure of how a candidate will perform on the job? Such tests are critically evaluated. The authors believe it is stupid to use personality tests for selection purposes.

The performance appraisal sourcebook, edited by Lloyd S Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1982: 190p.
Begins by defining performance appraisal then defines performance and how to develop performance criteria. The third section covers job

analysis, types of performance measures, and choosing the right method. This is followed by how to carry out performance appraisal, how to train the raters giving performance feedback, and using appraisal for human resource management. There are numerous examples of tests and methods such as behaviorally anchored rating scales (BARS) managing by objectives (MBO) relative rating systems and graphic rating scales.

"Trainability testing," Training Officer, v.14, ns. 11-12 1978: 279-280.
In trainability tests, first the instructor teaches the applicant the test task (chosen because it incorporates essential elements of the work for which selection is being made). A standardised form of instruction is used, and during the teaching period the applicant is free to ask questions. After this the applicant is asked to perform the task unaided. The instructor evaluates the performance by noting errors on a standardised error check list, then rates the performance and compares the test result with expected results for applicants. If the result falls below the cut-off point the applicant is rejected. The test is intended to show how well the applicant can absorb instruction and apply it. The test also gives the applicant a taste of the job he/she is applying for. Some applicants withdraw their applications after trainability testing, because they decide they do not like the work. If such applicants had been taken on, they probably would soon have left, so trainability testing also reduces turnover of staff. Many trainability tests are for blue collar jobs, and new developments in trainability tests may be in the white collar area.

Trattner, Marvin H, "Synthetic validity and its application to the uniform guidelines validation requirements," Personnel Psychology, v.35, n.2, Summer 1982:383-397.
The Uniform Guidelines for Employee Selection Procedures created a need for efficient validation methods that can be generalised to a class of occupations. One method currently authorised by the Guidelines is synthetic validation. Describes approaches to synthetic validity. Recommends Primoff's J-Coefficient approach.

Tyler, Leona Elizabeth and W B Walsh, Tests and measurements, 3rd ed. Englewood Cliffs, New Jersey: Prentice-Hall, 1979.

FULL ALPHABETICAL LIST OF ALL REFERENCES

"A step-by-step way to conduct worthwhile focus groups," Training, v.15, n.12, Dec 1978: 50-(2p).

A systems approach to education and training, edited by Alexander J Romiszowski, London, Kogan Page, 1970: 96p.
Papers presented at a conference on the systems approach held in 1969. Clearly defines "systems approach," "cybernetics" and "programmed instruction." The systems approach is divided into two categories: deterministic and probabilistic. Three major types of activity occur in a systems approach: analysis of objectives, synthesis of problem (course construction) and stages of evaluation (not covered in this book). Media and computer-assisted instruction are also covered, although the book was written when these concepts were in their formative stage.

Abella, Kay Tytler, Building successful training programs: a step-by-step guide, Reading, MA: Addison-Wesley, c.1986: 156p.
This book explains how to do an effective needs analysis; how to work with other training professionals in preparing program specifications and documenting the program design; how to chose materials and training techniques that fit the overall design and achieve the goals of the program; and how and when to secure the approval of program sponsors and line managers.

"Advice for performance-based training," Training, v.19, n.1, Jan 1982: 36.
Editorial comment.

Albert, Michael, "Assessing cultural change needs," Training and Development Journal, USA, v.39, n.5, 1985: 94,97-98.
Following the model presented here, needs assessment can bring together training efforts and organization development. The model is a "culture needs analysis," to precede change in organizational culture. A case study is described where a large nationwide organization is changed into 23 separate businesses. In training the model can be used as an educational device to provide an understanding of what culture is, how it develops, and what are its effects.

Albrecht, Karl, "Why it's time for a systems approach to organization development," Training, v.19, n.5, May 1982: 53, 57-58, 60-61.

ED251514

Alkin, Marvin C. et al, Annual report. Technical reports. Evaluation productivity report, Los Angeles: California University Center for the Study of Evaluation, 1984. 145p.

Presents three reports after outlining the 1984 activities and results of the Center for the Study of Evaluation's (CSE's) Evaluation Productivity Report. The reports are: "The administrator's role in evaluation use", "Factors common to high-utilization evaluations:, and "Reflections on evaluation costs: direct and indirect".

ED251515

Alkin, Marvin C. et al, The administrator's role in evaluation use. Evaluation productivity report, Los Angeles:California University. Center for the Study of Evaluation, 1984. 46p.

Research has uncovered a variety of factors influencing potential use of evaluation. These factors reflect human considerations, such as people's attitudes toward and expectations of the evaluation, context considerations, procedures used and means of communicating the evaluation. Suggests that the potential and applications of evaluation can be greatly enhanced if it is organised to meet specific needs in light of the factors operating, and that a program level administrator is the best person for the job.

Allen, Robert F., "Group Norms: their influence on training," in: Training and development handbook: a guide to Human Resource Development, 3rd edition, New York, McGraw-Hill, 1987: 180-194.

The expected or anticipated ways of behaving in a group are called "norms." The development of norms in an organisation is affected by a number of key influences. These include: leadership commitment, role models, feedback, recognition and reward, skill development, initial orientation and work group support. This article considers the changing of norms through a normative systems approach to training.

Alves, Euro and William R Handy, "Evaluating supervisory training in Los Angeles County," Training Directors Journal, August 1963: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 132-134.

Anderson, Bill, Report on the progress made and problems encountered in introducing Trainability Testing into the London Regional Skillcentres, Sheffield, Training Division, Manpower Services Commission, Moorfoot, September 1983. 26p.

An account of the introduction of trainability testing to regional skillcentres in the London region. It concludes that trainability testing based on the London regional approach could be introduced nationally into skillcentres provided that adequate resourcing is available. The London projects should be continued to facilitate the development of new tests and to act as a proving ground for the wider role which trainability testing may play in a national strategy for selection.

ED275870

Anderson, Tony and Neil Jones, TAFE curriculum research: a review of group process methods, Payneham (Australia), TAFE National Centre for Research and Development, 1986: 182p.

The issue of how to react quickly to the educational needs arising from technological change has been deemed a central problem facing Technical and Further Education (TAFE) in Australia. Therefore, a national study examined various curriculum research methods that hold promise for speeding up the curriculum research and development process. The first phase of the study consisted of a description and analysis of group process methods. The following methods were analyzed: the Nominal Group Technique, the Developing a Curriculum Process (DACUM), the critical incident technique, Force Field Analysis, and brainstorming. It was concluded that the Search Conference, Delphi and exploratory methods, and, to a lesser extent, the Nominal Group Technique hold promise for providing data for adapting curriculum to occupational structural change. DACUM, while a promising method of obtaining data in the cognitive domain, may need to be linked to other methods that are more sensitive to change when used as a curriculum research procedure on occupations undergoing structural change, the critical incident technique can be advantageous in curriculum research for short courses, and Force Field Analysis appears best suited for use as an adjunct to other group process methods. In addition to describing the research project and its findings, this report includes several chapters of practical guidelines on using and blending the various group process curriculum research methods. Appendixes include descriptions of some questionnaire methods used and a sample search conference, observational studies, and a DACUM chart. Four pages of references and figures and tables are included.

ED275871

Anderson, Tony and Neil Jones, The facilitation of curriculum research workshops in TAFE, Payneham (Australia) TAFE National Centre for Research and Development, 1986: 114p.

The processes entailed in facilitating or leading workshops or seminars for researching the curriculum in Technical and Further Education (TAFE) were examined by using a modified Delphi process, which was followed by a 2-day workshop. Participants in the study were all experienced curriculum development specialists with knowledge of one or more of the following group process methods: Search Conference, Nominal Group Technique, developing a Curriculum (DACUM) and its derivatives, and the Critical Incident Technique. The facilitator role was examined in terms of the value orientations (preferences) and social rules (guides for action) used by experienced TAFE facilitators/group leaders. The facilitator/group leadership process was shown to require complex interpersonal skills, including the ability to set clear directions in a nonauthoritarian manner, negotiate flexibly with group members, face and resolve conflicts, and motivate groups. A model of the general stages and steps through which curriculum research workshops progress and a guide to the selection of group process methods for curriculum research in vocational education were developed on the basis of these research findings. Appendices include instructions to the participants in the study workshop, a summary of the workshop examining the facilitator role, detailed results concerning facilitators' value orientations and social rules, and an example of personal constructs data. A four-page reference list and tables and a figure are included.

Annett, J et al, Task analysis, London, Dept. of Employment, c1971: 23p. (Dept. of Employment, Training information paper; no.6).
See also, Shepherd, A (1976).

Army School of Instructional Technology, The writing of training objectives, Beaconsfield, Bucks: RAEC Centre, Wilton Park, no publishing date given, 87p. (No.3 in the Series - "The Systems Approach to Training.")
Looks at the theory of training objectives - definition, need, different types - and then applies it to writing objectives using the systems approach.

Army School of Instructional Technology, Validation of training: a basic guide, Beaconsfield, Bucks, RAEC Centre, Wilton Park, Sept. 1974: 58p. (No.4 in the Series - "The Systems Approach to Training.")
The desirable characteristics of measuring instruments used in the assessment of training are validity, reliability, objectivity, freedom from contamination, discrimination and practicability. The assessment techniques discussed are questionnaires, report forms, and interviews. 8 steps in the validation of training are described. Steps 1-6 are concerned with internal validation and steps 7 and 8 with external validation of training. Course effectiveness questionnaires are appended.

Army School of Training Support, The use of tests in training, Beaconsfield, Bucks, RAEC Centre, Wilton Park, (?) 29p. (No.5 in the Series - "The Systems Approach to Training").
A guidebook for those involved in test development, test design, test administration and the validation of training. Gives examples of practical tests (performance tests) and their scoring, written tests and their marking and oral tests. Oral tests are only used when tests of another type cannot be used.

Asian and Pacific Skill Development Programme, Skill testing of motor vehicle mechanics, Report of a regional workshop, Bombay, India 1981. Islambad, Pakistan: Asian and Pacific Skill Development Programme, (APSDEP), 1982. 79p.
Workshop held to promote and develop occupational skill standards, testing and certification within countries of the region. Covers several methods of performance testing such as norm-reference and criterion-reference methods and progress assessment tests, with a straightforward method of task analysis. Information on statistical analysis of test items is included.

Atkins, Brian, "To what extent is a systems model appropriate to the diagnosis of training needs and the conduct of training in organisations?" Programmed Learning and Educational Technology, v.20, n.4, Nov. 1983:243-252.
An examination of the origin and content of general systems theory is followed by identification of the major characteristics of systems and brief discussion of use of models. Two ways of applying a systems model are identified, and their appropriateness is assessed in relation to particular training circumstances.

Australian Institute of Training and Development, Analysing Training Needs, Lalor, Vic. Australian Institute of Training and Development, Training Needs Analysis and Evaluation Group, 1987: 6p.
Describes training needs analysis as a six step process: 1. recognition that a problem exists; 2. identification of the real problem and cause; 3. can the real problem best be solved by training? 4. examine occupational and individual needs; 5. is meeting the original need justified? 6. design the training programe. Each step is described briefly, and a case history is given as an example of the way in which the six step process is applied.

Bailey, Catherine T, The measurement of job performance, Aldershot, Hampshire: Gower, 1983: ix 238p.
The use of and specific performance appraisal and measurement methods are examined. The concepts of criterion and dimension are discussed. The role of subjectivity in performance measurement is explored, and managing it discussed. The theoretical issues are addressed.

Bakken, D and A L Bernstein, "A systematic approach to evaluation," Training and Development Journal, (USA) v.36, n.8, 1982:44-51.

Beck, Arthur C Jr and Ellis D Hilmar, "Training for 'organization' results," Training, v.16, n.4, April 1979: 74, 76-79.
Although not directly about validation, this article makes points that anyone involved in validation and evaluation needs to take into account. It says that the critical question is: what contribution did the training event make to a desired organizational outcome or result? The organizational result is outside of the individual or the individual unit. Activities, such as seminars, may be well run, yet not have the desired organizational result. Trainers need to take a problem solving approach to identify the desired organizational result.

Becker, Stephen, "Analyzing organizational performance," Training, v.14, n.6, 1977: 19-20
Perhaps the most important job trainers can perform isn't training, but determining what training, if any, is required to help solve organizational problems. This article describes the whats, whys and hows of doing this.

Becker, Stephen, "Competency analysis: looking at attitudes and interests as well as technical job skills," Training, v.14, n.12, 1977: 21-22.

Becker, Stephen, "How to write Training Solution Statements," Training, v.14, n.9 1977: 18- (2p).

Belasco, James A and Harrison M Trice, "Unanticipated returns of training," Training and Development Journal, (USA), July 1969: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 66-71.
The therapeutic value of training session for supervisor's feelings of frustration and aloness, and the formal recognition that supervisors exist are two of the by-products of training sessions, there are more uncovered by this evaluation study.

Bell, James D and Deborah Kerr, "Measuring training results: key to managerial commitment," Training and Development Journal, (USA) v.41, n.1, Jan. 1987: 70-73.
Training evaluation on four levels: do participants like it? Did they learn? Do they use it? and Did it impact the bottom line?

Benjamin, Ellen R, "Using the 'post-then' method of evaluation," Training, v.19, n.11, Nov. 1982: 72.

ED199565
Bernard, Jeanne T and R Michael Digman, An overview of miner training: recommendations for curriculum development, instructional strategies and evaluation techniques for classroom training, Paper presented at the Annual Meeting of the American Educational Research Association, (Los Angeles), 1981. 18p.
Report of a study conducted to evaluate the effectiveness of miner training of new miners and those taking an annual refresher course. Results showed that for underground inexperienced workers, that training eliminated educational differences. For refresher trainees, previous training, and not years of experience was significant in pre-test scores.

Bernhard, Keith and Anthony DiPaolo, "Profiling and targeting training and development needs," Performance and Instruction, v.21, n.10, Dec. 1982: 12-14.
Describes the need for needs assessment integrated with the goals of the organisation, and criticizes reactive approaches (i.e. squeeky wheel/crisis approaches). A needs assessment is required to guide the investment of resources in training, equipment, materials and personnel. Describes 'START', a composite approach to training needs assessment. (START = Systematic Technique for Assessing Resources and Training/Development). The 5 phases of START are described.

ED254677
Bernstein, Richard and Roger A Mussell, Electronics curriculum planning guide for the 1980's and 1990's. Interim report, Flagstaff, Arizona: Northern Arizona University. Center for Vocational Education, 1984. 54p.
Study conducted as part of a project to develop a competency-based electrical/electronics, (E/E), curriculum in Arizona. Tasks centred around identifying competencies necessary for E/E jobs and establishing a framework for developing a statewide competency-based E/E technician training program.

Billington, G C, A survey of training requirements in the NZ Fishing Industry, Wellington. Fishing Industry Training Council, 1984: 108p.
Report on a survey conducted to determine whether current industry training is meeting the requirements and to assess attitudes to training among the members of the catching, processing and retail sectors who took part. The survey/interview method is used to gather information, which is analysed and presented as results with extensive use of charts and diagrams.

Birnbrauer, Herman, "Trouble-shooting your training program," Training and Development Journal, (USA) v.41, n.9, Sept. 1987: 18-20.
If trainees fail to implement on the job what they have learned in training, it means you have to examine the program for weaknesses in objectives, instructional design or delivery, and for environmental barriers in the workplace. Formative and summative evaluation are both required. A list of questions for formative and summative evaluation is included. Kirkpatrick's four levels of training evaluation are recommended as a planning model; they include trainee reaction, trainee learning, trainee behaviour on the job, and organizational results. In this article a wide field of concepts is covered very succinctly.

Birnbrauer, Herman and Lynn A Tyson, "How to analyze needs," Training and Development Journal, (USA) v.39, n.8, August 1985: 53-55.
A needs analysis determines whether a training program is really necessary. This article includes check lists: (a) the steps to be done in a needs analysis, and (b) the steps to be covered in the interviewing process. When needs have been correctly identified, companies can design a corrective action plan that is applicable, expedient, cost-effective, and provides the greatest return on investment.

Black, H D and W B Dockrell, Diagnostic assessment in technical education: a teacher's handbook, Edinburgh: Scottish Council for Research in Education, 1980: 76p.
Looks at a model for evaluation of individuals in technical education, the diagnostic assessment process, which is designed to counteract the negative pass-fail theory of ordinary tests and exams. Includes numerous examples of tests which can be applied using the model. (Although the book focusses on technical education in secondary schools, the material can be easily adapted to a training environment).

Blank, William E, Handbook for developing competency-based training programs, Englewood Cliffs, New Jersey: Prentice-Hall, 1982. 352p.

Bledsoe, John, "When solving your own problems there are six pitfalls to avoid," Training, v.14, May 1977: 86 (1p).

Blumenfield, Warren S, "Attitude change as a criterion in training," Training and Development Journal, (USA) Oct. 1966: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 240-243.

Blumenfield, Warren S, Development and evaluation of job performance criteria: a procedural guide, Atlanta, Georgia: Publishing Services Division, School of Business Administration, Georgia State University, 1976. 46p.
Presents the idea of criteria as indexes of job performance, giving four sources of criteria: job sample, production, personnel and subjective rating.

Borinstein, Dennis I, "When training is not enough," Training and Development Journal, (USA), v.37, n.4, April 1983: 92,94.
The first step in finding out if a training program is necessary is to conduct a performance audit to determine whether the situation at hand is a knowledge or performance problem. Such an audit is described.

Bowman, Barbara, "Assessing your needs assessment," Training, v.24, n.1, January, 1987: 30-34.
Many training programmes are put in place without a needs assessment preceeding them. To avoid this, the training department should take a proactive role, rather than a reactive role, and do assessments before training programmes are requested, or problems referred. A proactive needs assessment is described, and warnings given about possible pitfalls.

Bowman, Barbara, "SINS of omission: the missing link in evaluation," Training, May, 1987: 45-48.
How to evaluate needs not met, classes not taught, and opportunities not realized. Link human resource development (HRD) to your organization's strategic plan. Produce a total program evaluation, based on a needs assessment. Fill in the gaps with informal sources of information.

Borus, Michael E, Measuring the impact of employment-related social programs. A primer on the evaluation of employment and training, vocational education, vocational rehabilitation, and other job-oriented programs, Kalamazoo, Michigan: W E Uphohn Institute for Employment Research, 1979, 139p.
Defines evaluation and gives three broad types; process, impact and strategic analysis, concentrating on all aspects of impact evaluation in chapter 2. Looks at case-study, before-and-after, comparison group and random control group methods are evaluated as alternative, but problematic, methods.

Boyd, Joseph L Jr and Benjamin Shimberg, Handbook of performance testing. A practical guide for testmakers, Princeton, New Jersey: Educational Testing Service, 1971. 182p.
A handbook for practising vocational trainers to use in planning and preparing performance measures for evaluating instruction. Contains a wide selection of performance tests in use at the time for industries such as woodworking, fabric repairing, welding, dental hygiene and cosmetology.

Boydell, T H, A guide to the identification of training needs, London: British Association for Commercial and Industrial Education, 1976: 44p.
Concentrates more on establishing a need for training needs analysis and its definition than on the actual analysis process. Five approaches are described - the organisation development approach, welfare approach, administrative and political approach, but not in any detail. Appendices cover characteristics of training approaches, data-collection methods, and systematic training in ten steps.

Bradley, John, "How to interview for information," Training, v.20, n.4, April 1983: 59- (4p).

Bramley, Peter, Evaluation of training: a practical guide, London: BACIE, 1986: 64p.

Bramley, P and A C Newby, "The evaluation of training: 1. Clarifying the concept," Journal of European Industrial Training, v.8, n.6, 1984:10-16. (See also Newby and Bramley, "The evaluation of training part II: the organisational context,").
The literature is generally unhelpful in the confusion of concepts and terminology and in the problems of translating these various schemes into practice. This article clarifies some of these confusions by discussing the sequence of steps and the key issues which need to be faced when conducting an evaluation.

ED209546
Brandenburg, Dale C, Quality assurance of human resources development programs: a socio-technical continuum approach, Paper presented at the Annual Meeting of the Adult Education Research Association, (Los Angeles, CA.), 1981. 25p.
A useful, values-oriented human resource development (HRD) program evaluation approach is one that is empirical with its orientation derived from a social/technical perspective. Three continua are important; the general context of training, education and development, time dimensions, and action components, such as source types and collection methods for data. Time is the most critical dimension.

Brandenburg, D C, "Training evaluation: what's the current status?" Training and Development Journal, (USA), v.36, n.8, 1982:14-19.
Research report on function of evaluation and roles of evaluations.

ED164745
Branson, Robert K et al, Interservice procedures for instructional systems development: task V, final report, Tallahassee, Florida : Florida State University, Center for Educational Technology, 1977: 62p.
Analysis of Army training designed to improve training. Instructional Systems Development (ISD) model formulated containing five phases; analyse, design, develop, implement and control. The final product is a five volume set of manuals.

Brient, Deborah E, "Don't just teach MBO, use it yourself," Training, v.14, Nov:1977: 54- (2p).
MBO = Management by Objectives.

Briggs, Leslie J, The handbook of procedures for the design of instruction, Washington D.C.: American Institute for Research, 1970, 206p.

This book presents a set of procedures for the design of instruction. The procedures may be designated as a "model." In present context, the word "model" means three things:

a. the entire process of instructional design is described in an orderly series of steps to be taken;
b. the steps, taken as recommended, are based on research findings when possible, upon psychological theory at other points, and upon common reasoning when gaps in theory and established fact are encountered; and
c. the instructional materials generated by application of the model are subjected to empirical tryout and revision (formative evaluation), before the materials are judged to be satisfactory through final (summative) evaluation. The materials may then be put into normal, or operational use with predictable outcomes. This entire process is often thought of as consisting of three major stages: course design, development, and evaluation.

This model may be said to employ "the systems approach":

a. Goals of the instruction and standards to be attained are identified in terms of learner performance.
b. Evaluative measures are designed to assess attainment of goals.
c. Alternative sets of strategies are considered for purposes of selecting materials and methods to be employed.
d. Design decisions conform to the defined "inputs" - i.e. to the entering competencies of the intended learners and to the boundary conditions represented by the human and other resources available for the development and utilization effort.

Brinkerhoff, Robert O, "Expanding needs analysis," Training and Development Journal, (USA) v.40, n.2, 1986: 64-65.

Re-defining the function of needs analysis can bring you closer to realizing organizational goals. Needs analysis viewed as a problem solving effort.

Brinkerhoff, Robert O, "The success case: a low-cost, high-yield evaluation, "Training and Development Journal, (USA) v.37, n.8, Aug. 1983: 58-61.

Describes an evaluation method called "success case," in which trainees for whom the training really seemed to work are interviewed. They are asked (1) How have you used the training? (2) What benefits can be attributed to use of the training? (3) What problems did you encounter in using the training? What were the negative consequences of the training and/or its use? and (4) What criteria did you use to decide if you were using the training correctly or incorrectly?

Broadwell, Martin M, "Determining training needs," Training, Nov. 1975: 8-(2p).

Broadwell, Martin M, Supervisor and on-the-job training, 2nd edition, Reading, Massachusetts: Addison-Wesley, 1975: 156p.

Two sections on job analysis as a preliminary requirement of training needs analysis, to find out what is involved in a job and whether

employees tend to be able to do it without formal training. Has a section on training objectives and how to design them, and a section on how to evaluate the success of training measured against those objectives.

Brugnoli, George A, "Racial bias in the use of work samples for personnel selection," Dissertation Abstracts International, (B), v.37, n.6, 1976: 3128.

Buckley, R and J Caple, "The training audit," Journal of European Industrial Training, v.8, n.7, 1984:3-8.
Description of a model for examining the training system, called the training audit. The approach includes scrutinising the way in which training needs are assessed, the way training is designed and conducted, and the methods of validation and evaluation that are employed.

Burleigh, Adrienne, "DACUM: industry involvement in training needs analysis: (but where does the tutor fit in?)," Tutor, v.29, 1984:26-29.
Describes the process of training needs analysis by the DACUM, (Design a Curriculum), method, and defines the important role of tutors in validating and preparing courses.

Burleigh, Adrienne R, The DACUM trail and other intersecting paths, Wellington, Vocational Training Council, 1986: 45p.
A report of a Fulbright-Hayes study tour of the United States with additional learning experience in Canada, Hong Kong and Singapore. Gives a brief history of DACUM in the visited countries, and describes the work of organisations visited. Names and addresses of contacts are given. Describes how physics is taught as "The Principles of Technology." Mentions the need for competency based teacher education. Is a useful reference for the meanings of acronyms referring to organisations or programs in the countries visited.

Byham, William C, "Applying a systems approach to personnel activities: Part II: developing job-related, legally defensible personnel subsystems for training, selection and appraisal," Training and Development Journal, (USA) v.36, n.1, Jan 1982: 70-75.

Byham, William C, "Applying a systems approach to personnel activities: Part III: development of content-valid personnel programs (activities)," Training and Development Journal, (USA) v.36, n.2, Feb 1982: 86-87.
Re performance appraisal.

Byham, William C, "How assessment centres are used to evaluate training's effectiveness," Training, v.19, n.2, Feb. 1982: 32- (3p).

ED234162
Campbell, Clifton P, A systems approach to the preparation and conduct of trade and industrial training, Paper presented at the American Vocational Association Convention, (St. Louis, MO) 1982. 57p.
The Instructional Systems Development (ISD) approach for establishing

vocational training programs provides a methodology for gathering/analysing job information, developing instructional materials and media, conducting instruction and evaluating and improving training program effectiveness. Five phases of ISD model: analysis, design, development, implementation and control.

Campbell, Clifton P, "Instructional Systems Development: A methodology for vocational-technical training," Journal of European Industrial Training, v.11, n.5, 1987, full issue, 41p.
The priorities are changing for vocational and technical training. While the fundamental goals for training remain, emphasis is shifting from a focus on content delivery to a recognition of the importance of a systems approach. As a consequence, professionals involved with training are increasingly aware of the need for more rigour in the process by which training is developed, implemented and evaluated. The chief purpose of this monograph is to introduce training and other interested personnel to the Instructional Systems Development (ISD) approach. Collected in this one document is the essential information on the ISD process for the development and conduct of efficient and effective performance-based training programmes. For those planning a new training programme, this logical and organised approach provides a road map. Furthermore, the procedural steps presented are useful when modifying and revising existing programmes. Instructional Systems Development methodology is presented in five phases: analyse, design, develop, implement and control.

Campbell, Clifton P, "Training for employment - a systematic approach," Journal of European Industrial Training, v.9, n.4, 1985: 17-22.
Describes the instructional systems methodology for planning, developing, implementing and evaluating training programmes. It is a competency (performance)-based systems approach which ensures that trainees are taught the knowledge and skills essential for successful job performance.

ED254650

Campbell, Paul B and Phyllis Panzano, Toward excellence in secondary vocational education: elements of program quality, information series No.291, Columbus, Ohio: Ohio State University, Columbus. National Center for Research in Vocational Education, 1985. 45p.
Informs policy makers of the breadth of the elements of quality, suggesting an integrated framework for assessing quality. The framework is composed of three critical components: context, educational experience and vocational outcomes. Elements of quality are divided into individual and societal.

Cantor, J A, "The Concerns-Based Adoption Model: implications for institutionalization of change in technical training programs," Journal of Studies in Technical Careers, v.6, n.3, 1984: 205-213.
The educational practitioner responsible for training programs has become increasingly accountable for the outcomes of the training process. Attention has been focused upon methods of evaluation to measure effectiveness, the evaluation process can assist in designing strategies to further the training process. The Concerns-Based Adoption Model is a three-dimensional evaluation model that approaches the process from the standpoint of the trainee.

ED199270

Cantwell, Z M, Performance tests as dependent variable measures in personnel evaluation, Paper presented at the Annual Meeting of the Evaluation Network Conference, (Memphis), 1980. 29p.
Fair, valid and reliable measurement of dependent variables is important in personnel evaluation studies. Three categories of performances tests - job or work sample tests, situational tests and job earning/trainability tests - are being used with increasing frequency to measure personnel evaluation successfully. They seem to be fair measures when individuals are classified by race, age or sex.

"Careers topics: behavioural consistency," Education and Training, v.27, n.9, Oct. 1985: p277.
Newsbrief on "biodata." It is a form of testing which takes as its central axiom the assumption that the best available indication of how a person will behave in the future is the way he or she has behaved in the past.

Carkhuff, Robert R and Sharon G Fisher, Instructional Systems design II: evaluating the instructional system, Amherst, Massachussetts: Human Resources Development Press, 1984. 151p.

Carkhuff, Robert R and Richard M Pierce, Training delivery skills II. Making the training delivery, Amherst, Massachusetts: Human Resource Development Press, 1984. 209p.
Aims to teach the critical skills needed to carry out training programs. Two sets of skills are emphasised: content of training and trainee experience. The training objectives section uses a skill steps/substeps metho , and the evaluation section uses levels of evaluation, process ovement, acquisition, application, transfer and achievement arranged n lists.

Carlisle, Kenneth E, "Why your training-evaluation system doesn't work," Training, v.21, n.8, Aug. 1984: 37- (3p)

Carroll, Stephen J and Craig E Schneier, Performance appraisal: a systems approach, (The Scott Foresman Series in Management and Organisations.) Scott Foresman, 1982.
Performance appraisal and review systems; the identification, measurement and development of performance in organisations.

Casey, John J, "Trainability diagnosis: a humanistic approach to selection," Training and Development Journal, (USA), v.38, n.12, Dec. 1984: 89-91.
Making the best match between job and job applicant has never been easy, and accommodating special union rules makes selection methods more difficult. The trainability diagnosis approach described here not only meets with union acceptance, it improves selection decisions.

Catalanello, Ralph F and Donald L Kirkpatrick, "Evaluating training programs the state of the art," Training and Development Journal, (USA) May 1968: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 258-262.

Celinski, D, "Systematic on-the-job training," Training and Development, (USA) v.5, n.7, 1986: 15-18.
The author describes his own experiences in introducing and operating systematic on-the-job training in two differing industrial organisations. On the basis of this he argues the superiority of this training over non-systematic training in efficiency of time, correct application of knowledge and rate of learning. He categorises the occupations in which learners may successfully receive systematic training and the circumstances where it is applicable. An instructional technique is used and it is essential that training officers monitor its continued use to avoid slippage and regression to old established but less effective forms.

ED228474
Chalupsky, Albert B et al, Development and evaluation of vocational competency measures. Final report, Palo Alto, Ca, American Institutes for Research in the Behavioural Sciences, 1982. 65p.
A series of occupational competency tests representing all seven vocational education curriculum areas were developed, field tested and validated. Seventeen jobs were chosen for test development, such as farm equipment mechanic, grocery clerk and apparel sales. Information was gathered through interviews, a job information test, hands-on performance tests, etc. with relevant employees.

Chapman, Kevin, Selecting and training good staff, Palmerston North, N.Z.: Dunmore Press, 1984.

Chiles, W Dean and Earl A Alluisi, "On the specification of operator or occupational workload with performance-measurement methods," Human Factors, v.21, n.5, 1979: 515-528.
Five system-output or performance-measurement methods have been described in the literature for use in operator or occupational workload specifications: laboratory, analytic, synthetic, simulation and operational-system methods. A review and analysis of these methods indicates that laboratory methods, where appropriate, are the methods of choice, with the synthetic-work technique especially well suited to examinations of general workload questions. Analytic and synthetic methods appear to yield reasonable results, but both rest on relatively fragile data bases; with correction of this deficiency and further research on timesharing behavior or function interlacing, these methods should prove to be quite helpful, especially in systems designs and workload allocations. Simulation methods have the potential of providing quite useful information on operator workload, but simulators have not generally been used for this, and some of the difficulties implicit in their use are discussed. Operational-system methods,

except for some possible safety limitations, can be used on virtually any workload-specification problem suitable for investigation in a simulator, but data recording problems can be substantial, and often there is little agreement on what should be measured as criteria of good performance. The need for reliable, valid, quantitative criteria to reflect system performance is stressed, and a potentially useful paired-comparisons scaling procedure is described.

Christie, R, "Training for competence - the nature and assessment of the beast," Training and Development, (USA) v.4, n.4, 1985: 3-5.
The author, an occupational psychologist, surveys techniques for the assessment of competence in a behavioural model of skill acquisition. Once criteria are established for determining the objectives to be achieved, then a base line of competence - or job description is arrived at. The passmark for assessing competence should thus be 100% and the author questions the validity of percentage pass grades for external examinations and professional bodies. If essential competencies can be identified then credit can still be given for additional abilities.

ED217140
Clatsop Community College, A model for retraining/training of business and industry employees, Astoria, Oregon: Clatsop Community College et al, 1981. 125p.
Model designed to assist Oregon community colleges to respond to training/retraining of employees in business and industry. Consists of a five step process in construction of a program; background research, agency involvement, occupational analysis, instructional analysis, marketing of program.

Coffman, L, "Succesful training program evaluation," Training and Development Journal, (USA), v.34, n.10, 1980:84-89.
Description of a workshop approach in evaluating a training program's effectiveness.

Cohen, Stephen L and H Frank Gump, "Using simulations to improve selection decisions," Training and Development Journal (USA), v.38, n.12, Dec. 1984: 85-88.
Short job simulations make interviews more productive.

Couch, Peter D and George B Strother, "A critical incident evaluation of supervisory training," Training and Development Journal, (USA), Sept. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 154-159.

Crawford, Harold E, "A note of caution on listening training," Training and Development Journal, (USA), May 1967: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald

L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 116-118. Study shows possible false impressions and over-evaluation.

Cronbach, Lee J, "Course improvement through evaluation," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 101-115.

Cronbach, Lee J and Associates, "Ninety-five theses for reforming program evaluation," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing 1983: 405-412.

Culbertson, Katharine, and Mark Thompson, "An analysis of supervisory training needs," Training and Development Journal, (USA) v.34, n.2, Feb. 1980:58-60, 62.
First-line supervisors, second-level supervisors and middle managers were surveyed to identify the training needs of first-line supervisors. Highest ranks needed were those abilities relating to people, such as motivation, developing employees, communications, leadership and human relations. A one day program for supervisors was developed as a result of the survey.

ED261219
Daniels M Harry et al, Toward the adoption and utilization of a model, strategies and procedures for introducing change skills instruction into Vocational Programs, Carbondale, College of Education, Southern Illinois University, Jul. 1985: 74p.
This project presented a conceptual model for adapting with change the strategies and procedures for introducing change skills instruction into vocational programs to groups of vocational educators and administrators at sites throughout Illinois. Following the presentations the project directors solicited feedback from the persons who attended, about the heuristic value of the conceptual model and the practical utility of the various strategies and procedures for introducing change skills instruction. The project also attempted to integrate the products developed through this project with the strategies used by the Competency-Based Vocational Education (CBVE) Project. This final report of the project includes documentation of all project activities; a summary of the evaluative feedback from workshop participants; a summary of the technical assistance provided to the CBVE sites; and strategies, procedures, and methods for disseminating the information generated in the project. A major portion of the final report consists of copies of major ideas and articles disseminated by the staff.

Davies, Ivor K, Competency-based learning: technology, management and design, New York, McGraw-Hill, 1973.

Davies, Ivor K, "Task analysis for reliable human performance," Performance and Instruction Journal, v.20, March 1981: 8-31.

ED255708

Davis, Scott R and Alan Frost, Competency-based education for adult learners, 1985. 11p.
A concise summary of the theory and practice of competency-based education, especially as it applies to adult learners. Defines and lists critical components for CBE and cites advantages of the system. The organisation of CBE learning activities in a CBE program is illustrated with a flowchart and suggestions for developing CBE materials, achieving objectives and presenting material are put forward.

Deming, Basil S, Evaluating job-related training: a guide for training the trainer, Washington D.C.: American Society for Training and Development/Englewood Cliffs, New Jersey: Prentice-Hall, 1982.
This book covers the major tasks an evaluator must perform when evaluating training, and it defines and illustrates the many evaluation skills required to perform those major tasks. After studying the book, the reader should be able to apply each of these skills.

Denova, C C, Test construction for training evaluation, New York, Van Nostrand and Reinhold, 1979: 118p.

Department of Employment and Youth Affairs, Recruitment and selection bibliography, 1970-1979, Melbourne: Department of Employment and Youth Affairs, Central Office Library, 1979: 23p.
Covers aspects of recruitment and selection such as screening interviews, cost effective recruitment, trainability testing, reference checking and non-verbal communication in interviews.

D.F., "Florida Power Corporation: focus on performance," Training, v.22, n.11, 1985: p.57-60.
Description of the problems the training department had with management, supervisors and unions, when they implemented a competency based way of directing training and evaluating trainees in on-the-job. How the problems were overcome and the employees started to use the training manuals to guide their own development.

D.F., "Validity and reliability: a very short course," Training, v.23, n.3, March 1986: 89-90.
A test or survey is reliable if it yields consistent results at two different points in time, assuming there have been no major changes in people or circumstances and no intervening treatments. An assessment instrument is "valid" if it accurately measures what it is supposed to measure. It is possible for an assessment instrument to be reliable, but not valid.

Dilauro, T J, "Training needs assessment: current practices and new directions," Public Personnel Management, v.8, n.6, 1979:350-359.

Distefano, M K Jr et al, "Job-relatedness of a post-training job knowledge criterion used to assess validity and test fairness," Personnel Psychology, v.33, n.4, Winter 1980:785-793.
Significant job-relatedness was found for a post-training job knowledge test criterion. Content validity test methods may be able to help solve the problem of criterion relevance in validation research by providing quantitative relevance of job-relatedness.

Division of Occupational Analysis, A guide to job analysis: a "how-to" publication for occupational analysis, Menomonie, Wis., United States Employment Service, Employment and Training Administration, U.S. Department of Labour, 1982: v, 488p.
This is a revised and expanded version of the 'Handbook for Analyzing Jobs (1972)' based on experience gained in using that handbook. It is divided into three sections. The first covers definitions, methodology and applications. The second describes the job analysis components of Work Performed and Work Characteristics. The third is devoted to job analysis forms and procedures and their use in the United States Employment Service. Included is a chapter on writing job descriptions based on job analyses.

Dobles, Robert W, Patricia M Drost, Stanley S Hazen, and Robert C Hinkelman, "If you are not doing it already, verify your training objectives," Training, v.16, n.12, Dec. 1979: 36- (8p).

Dopyera, John and Louise Pitone, "Decision points in planning the evaluation of training," Training and Development Journal, (USA), v.37, n.5, May 1983: 66-71.
There are eight decision points when planning an evaluation: (1) Should an evaluation be done? (2) What is the purpose of the evaluation? (3) What will be measured? (4) How comprehensive will the evaluation be? (5) Who has the authority and responsibility? (6) From where will the data come? (7) How will the data be collected and compiled? (8) How will the data be analyzed and reported?

Dowling, John R and Robert P Drolet, Developing and administering an industrial training program, New York: Van-Nostrand-Reinhold, 1979. 200p.

Downs, Sylvia, Testing Trainability, England, draft manuscript (to be published by NFER-NELSON) 1984: 40p.
Lists 20 ways of recognising a trainability test, and reports the results of validation of trainability tests. Discusses the pros and cons of using trainability tests. Illustrated example of trainability test for forklift drivers. Describes how to validate a trainability test. Describes how applicants use trainability tests for self assessment, i.e. "job-tasters to see how they like the job.

Downs, Sylvia, Trainability testing: a practical approach to selection, London, Her Majesty's Stationery Office, Manpower Services Commission, Industrial Training Research Unit (Cambridge) 1977: 32p.
Trainability tests can be used to help screen job applicants. They can

be used for young applicants and for older applicants who are applying for retraining. Advantages and disadvantages of trainability tests are discussed. Chapter II explains how to construct a trainability test, how to validate it, and how to administer it. This includes how to analyse the job, how to select the task, how to decide on acceptable performance, how to rate the results and how to train the instructors who will administer the test.

Dreilinger, Craig, Richard McElheny, Bruce Robinson and Dan Rice, "Beyond the myth of leadership-style training - Planned organisational change," Training and Development Journal, (USA), v.36, n.10, Oct. 1982: 70-74.
A description of the results of a needs assessment which used a form of constraints analysis. Organisational practices act as constraints on performance.

Duncan, Keith D and Chris J Kelly, Task analysis, learning and the nature of transfer, London: Training Division, Manpower Services Commission, 1983. 29p.
Examines ideas behind "grouping of skills". Defines "skills transfer" and differentiates between it and task analysis. Transfer can be divided into two groups - transfer of components from one task to another, and the integration of component skills into a new higher order skill. The task analysis approach used is "hierarchical task analysis". Examples of this in the form of skills checklists are included.

Dunn, S and K Tnomas, "Surpassing the "smile sheet" approach to evaluation," Training, v.22, n.4, 1985:65-67,71.
Identifies four levels of evaluation for training and development programs and describes building an evaluation of instructional design.

Easterby-Smith, Mark, "How to use repertory grids in HRD," Journal of Industrial Training, v.4, n.2, 1980: whole issue, 32p.
Indicates the potential for the repertory grid technique in human resources development and training, while providing sufficient background information about underlying assumptions, design alternatives, analysis and interpretation to enable the reader to use the technique in his or her own organisation. However, it should not be used lightly; the technique is complex, and because of the depth of investigation, if mishandled it can be harmful to individuals and organizations. Those wishing to use it in novel ways should not be discouraged, but they would be advised to seek out the advice of others more experienced in its use beforehand. An important principle is that they should not experiment with innovations on others until they have tested them on themselves and their friends. If they have difficulty completing them, or cannot understand the results from their own grids, the data are unlikely to have any more meaning when they are obtained from other people.

Ecenboy, Cliff, "Evaluating training effectiveness: a form that seems to work," Training, v.20, n.7, July 1983: 56- (2p.).

ED229718

Ekstrom, Ruth B, Measuring adult womens' job relevant life experience learning, Princeton, New Jersey: Educational Testing Service, 1982. 33p.
Part of the Project HAVE skills Program designed to develop career counselling for women re-entering the workforce after raising families. Questionnaires designed around 524 Skills such as consumer economics and communications were developed to identify job-related skills acquired by women in their absence from the paid labor force.

ED216266

Ekstrom, Ruth B, Project HAVE Skills: a program for matching women and jobs. Employer's guide, Princeton. New Jersey: Educational Testing Service, 1981. 131p.
This employer's guide is part of the HAVE (Homemaking and Volunteer Experience) Skills material designed to help women identify job-relevant skills learnt as homemakers and volunteers, and to match the skill with paid jobs. Identification and assessment of skills, the development of the survey and the use of the HAVE skills chart with competency statements are discussed.

Erkut, Sumru and Jacqueline P Fields, "Focus groups to the rescue," Training, v.41, n.10, Oct. 1987: 74-76.
Here is an evaluation method for those times when you need to make qualitative judgements, but do not have any objective data. It can be used to pretest training materials. A facilitator is needed, and the success of the focus group as an evaluation technique rests on the facilitator's expertise. A sample of focus group discussion is given.

Evaluating training programs, compiled by Donald L Kirkpatrick, Madison, Wisconsin American Society for Training and Development, 1975, 313p.
A collection of articles from the Journal of the American Society for Training and Development. The relevant articles are listed separately in this bibliography. See: Aves and Handy (1963); Belasco and Harrison (1969); Blumenfield (1966); Catalanello and Kirkpatrick (1968); Couch and Strother (1971); Crawford (1967); Fast (1974); Gallegos and Phellan (1974); Gilbert, Campbell and Oliver (1963); Goodell (1969); Kayloe (1971); Kirkpatrick (Nov. 1959); Kirkpatrick (Dec. 1959); Kirkpatrick (Jan. 1960); Kirkpatrick (Feb. 1960); Kropp and Hankin (1962); Lawrie and Boringer (1971); Lerda and Cross (1962); Lester (1971); Morton and Adams (1961); Murdick (1960); Randall (1960); Reeves and Jensen (1972); Rose (1968); and Scott (1971).

Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 423p.

Exploring competency-based education, edited by W Robert Houston, Berkeley, McCutchan, 1974:

ED255762

Farley, Joanne et al, Reconceptualization of vocational education program evaluation, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985. 169p.
Information on vocational education as an area to be evaluated, existing evaluation methodologies and the theoretical basis for a proposed method called critical inquiry. Topics discussed include: the need for new directions in vocational education evaluation, technological treatment of evaluation, an alternative to an evaluation frame-work and suggestions from educational research.

Fast, Dorothy, "A new approach to quantifying training program effectiveness," Training and Development Journal, (USA), Sept. 1974: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 47-53.

ED238884

Federal Bureau of Investigation, State and Local Law Enforcement Training Needs in the United States, Vol. I: Executive Report, FBI, Quantico, VA, Oct 1983: 44p.
Report of a long-term comprehensive analysis of state and local law enforcement training needs throughout the United States. The analysis was undertaken by the Institutional Research and Development Unit, Training Division, of the Federal Bureau of Investigation. A study was developed to (1) determine the type and extent of any state and local law enforcement training needs as perceived within their individual organizational missions and environments; (2) identify any differences in the nature of the training needs at different demographic levels; (3) provide training needs information which would facilitate the development of programs. Questionnaires were mailed out, and, in the analysis of the findings, basic police problems and skill areas were given high priority by law enforcement agencies. Needs given high priority by some respondents were given low priority by others. Includes an introduction, a review of the literature, discussion of methodology, findings and conclusions as well as a list of references.

ED238885

Federal Bureau of Investigation, State and Local Enforcement Training Needs in the United States, Vol II: Technical Report, FBI, Quantico, VA, Oct 1983: 127p.
Report of a long-term comprehensive analysis of state and local law enforcement training needs throughout the United States. It was undertaken by the Training Division of the Institutional Research and Development Unit of the Federal Bureau of Investigation. A study was developed to (1) determine the type and extent of any state and local law enforcement training needs as perceived with their individual organizational missions and environments; (2) identify any differences in the nature of the training needs of the various demographic levels; (3) provide training needs information which would facilitate the design of any Federal Law Enforcement training programs

developed to meet state and local law enforcement agencies. This document, a technical report of the study, includes an introduction, review of the literature, detailed disccussion of methodology, report findings and conclusions, a list of references, 13 tables and 6 figures. Also included are appendices supplying survey materials, the follow-up letter, and rank order listing for 12 activities.

ED254615

Ferqueron, Margaret, Educating for the future: the effects of some recent legislation on secondary vocational education, Knoxville, Tennessee University: Office for Research in High Technology Education, 1984. 60p.

Problems arising from two possibly far-reaching legislative reforms within secondary vocational education; minimum competency requirements and increased course requirements for graduation. One problem is that course testing is the most immediate way for legislators to satisfy the public, the danger is that two different understandings of purpose-accountability versus effectiveness may emerge with regard to minimum competency testing.

Ferrari, Sergio, "Personnel appraisal: the system approach," Journal of European Industrial Training, v.7, n.4, 1983: 3-9.

Examination of appraisal methods reveals a relationship between such methods and the organisational structures in which they are applied. A distinction may be drawn between three main structures: charismatic, bureaucratic and "co-operative". The "system method" of appraisal may lead to some immediate advantages in any type of structure. It facilitates acceptance of people to allow themselves to be judged in writing insofar as the responsibility of each individual is viewed in the context of his relations with the group. The method may be useful to management, as it furnishes a constant flow of advice and proposals on how to improve work organisation and production techniques, even when the jobs themselves are being satisfactorily performed.

ED232062

Finch, Curtis R, Review and synthesis of research in trade and industrial education, 3rd edition, Information series No.260, Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education, 1983. 60p.

Third edition of review and synthesis of trade and industrial (T&I) education research, mainly studies from 1977 to 1982, taken from ERIC et al. Aspects covered: philosophy and scope, student characteristics and needs, curriculum development, instruction and learning, teacher education, administration and evaluation.

ED178696

Finch, Curtis R and John R Crunkilton, Review and critique of strategies for determining career education curriculum content, Blacksburg, Virginia: Virginia Polytechnic Institute/State University, 1979. 13p.

Consideration and comparison of major curriculum development methods such as theoretical base, philosophical base, introspection, function approach, task analysis, Delphi approach, critical incident technique and DACUM. Includes a summary of what each technique involves.

Finch, Curtis R and Robert L McGough, Administering and Supervising Occupational Education, Englewood Cliffs, N.J., Prentice-Hall, 1982: xv 302p.

Covers the topics of: occupational education leadership, occupational education organization and structure, leadership processes, the leader as motivator, planning and decision making, program and institutional planning, planning for special groups, personnel development, development in the community, effecting educational change, instructional management support-services management, personnel management, labour relations management, fiscal management and conducting occupational education evaluation.

Flanagan, John C, "The critical incident technique," Psychological Bulletin, v.51, July 1954: 327-358. Also reprinted in: Zemke, Ron and Thomas Kramlinger, Figuring things out: a trainer's guide to needs and task analysis, Reading Massachusetts, Addison-Wesley, 1982 p.277-317.

This is an article by the founding father of the critical incident technique. The technique grew out of work done by the Aviation Psychology Programme of the Army Air Forces in World War II. The introduction contains several examples of the use of the critical incident technique. Then there is a step-by-step explanation of the procedure, followed by a brief discussion of each type of application. These include (a) measures of typical performance (criteria); (b) measures of proficiency (standard samples); (c) training; (d) selection and classification; (e) job design and purification; (f) operating procedures; (g) equipment design; (h) motivation and leadership (attitudes); (i) counselling psychotherapy.

Food, Drink and Tobacco Industry Training Board, Assessing your company's training needs, Croydon, (UK): Food, Drink and Tobacco Industry Training Board, 1972. 40p.

First in a series on systematic training; this one covers examination of a company's plans and problems and assessing overall training needs. Uses fourteen key investigation areas; planning, organisation, performance, delegation, recruitment and labour turnover, careers and pay, sales, costs and finance, methods stock control, quality and hygiene, industrial relations, the law and safety.

Food, Drink and Tobacco Industry Training Board, How to produce a simple modular training scheme: A guide for managers and training officers, Gloucester, (UK): Food, Drink and Tobacco Industry Training Board, 1977. 16p.

Defines the modular approach, lists requirements and advantages and goes through the training scheme development procedure. Identifies five methods of job analysis; the Training Within Industry, (TWI) method, medium-depth task analysis, complex skills analysis, faults analysis and social skills analysis.

Food, Drink and Tobacco Industry Training Board, How to use job analysis for profitable training, Croydon, (UK): Food, Drink and Tobacco Industry Training Board, 1972. 31p.

The second in a series on systematic training; this one covers job analysis. It is intended to be used after the first book. "Assessing

your company's training needs" to identify what specific jobs entail, how they relate to other jobs and organisational objectives. Looks at job description, job breakdown methods, such as medium-depth task analysis, complex skills analysis and training within industry, (TWI), trainees' needs and the manager's role.

ED223937

Ford, J Kevin and Steven P Wroten, A content validity ratio approach to determine training needs, Paper presented at the Annual Convention of the American Psychological Association (Washington DC) 1982. 39p.
Two methodologies covering problem of deficiencies in training literature ie. evaluation of content validity of training programs and ways to redesign programs. Methodology establishing job relatedness of a police recruit training program. Methodology establishing link between training evaluation and training program reassessment.

Foxon, Marguerite, "Evaluation of training: the art of the impossible," Training Officer, v.22, n.5, May 1986: 133,134,136,137.
Describes evaluation as a thorny problem. Discusses the definition of evaluation, looks at the role and purpose of evaluation, the problem of measurement and how to develop a strategy.

Frank, Fredric D and Michael R Struth, "(The) self-assessment center," Training, v.21, n.3, March 1984: p.56- (3p).

ED252706

Further Education Unit, Towards a competence-based system. An FEU view, London: Further Education Unit, 1984. 13p.
Begins with the viewpoint that there is a common concern to raise standards of education and training and that wider access to training and jobs should be a priority. A wider definition of competence than that associated with working life is offered, one that embraces formal and informal learning, extends beyond occupational skills into life skills, and requires changes in attitude as well as methodology. Problems of competence assessment are discussed.

Gael, Sidney, Job analysis: a guide to assessing work activities, San Francisco, Jossey Boss, 1983

Gagne, R M, "Analysis of Objectives," in:
Instructional design : principles and applications, edited by Leslie J Briggs, Englewood Cliffs, N.J., Educational Technology Publications, 1977: 114-115.
See also Williams (1977) and Hunt (1986).

Gagne, Robert Mills, and L J Briggs, Principles of instructional design, New York, Holt, Rinehart and Winston, 1974.

Gallegos, Robert C and Joseph G Phellan, "Using behavioral objectives in industrial training," Training and Development Journal, (USA), April 1974: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 125-130.

Georgenson, Dave and Edward Del Gaizo, "Maximise the return on your training investment through needs analysis," Training and Development Journal, (USA), v.38, n.8, Aug. 1984:42-47.
Six steps to successful needs and analysis are (1) collect information about the organisation, (2) identify potential training opportunities, (3) conduct a performance audit, (4) select and test content areas, (5) determine the required skills, knowledge and abilities, and (6) verify this information against the organisations issues and goals.

Ghorpade, Jai, Job analysis: a handbook for the human resource director, Englewood Cliffs, N.J., Prentice Hall, 1987.

Gibbons, A S, "Pre-development analysis in military training," NSPI Journal, v.19, n.1, Feb. 1980:34-42.
Addresses the problems of conducting pre-development analysis in the military from a training developer's point of view, and discusses issues related to the basic questions of analysis and the rationale and method for performing it.

Gilbert, Joseph, Henry G Campbell, and Albert E Oliver, "An evaluation of interdepartmental training with objective tests," Training Directors, May, 1963: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 56-59.

Gilbert, Thomas F, "A question of performance Part I: The PROBE model," Training and Development Journal, (USA), v.36, n.9, September 1982: 20-22, 24-30.
The PROBE model is described by the author as a kind of "automated question generator" and "answer sifter." PROBE (profiling behavior) consists of several dozen questions that can be asked about any accomplishment of any job in any work situation. The answers help formulate a profile of behavior showing the major barriers to exemplary performance. The barriers are identified only, PROBE does not provide cures, it does help us focus on problems. The author has 3 objectives in this article: (1) To sell you on performance analysis and question models; (2) To give you a little practice in using PROBE and (3) To provide you with the rudiments of the concept of PROBE, and its theory. Part I of an article, the Part II appears in Training and Development Journal, (USA), v.36, n.10, 1982: 85-89.

Gilbert, Thomas F, "A question of performance Part II: Applying the PROBE model," Training and Development Journal, (USA), v.36, n.10, 1982: 85-89.
Part II of article in v.36, n.9, 1982: 21-22, 24-30. Describes case study using the PROBE model, and provides tips for using the model.

Gilbert, Thomas, Human competence : engineering worthy performance, New York, McGraw-Hill, 1978.

Gilbert, Thomas F, "Measuring the potential for performance improvement," Training, v.15, n.12, Dec. 1978: 25- (4p).

Gilbert, Thomas F, "Praxeonomy: a systematic approach to identifying training needs," Management of Personnel Quarterly, v.6, n.3, 1967:20-33.
Provides a basis for deciding how to limit training objectives to a practical program of instruction. Establishes four rules of limitation:
Rule One: D=M-1; Deficiency = Mastery - Initial Repertory.
Rule Two: Accomplishment versus Acquirement.
Rule Three: Knowledge and Execution.
Rule Four: Establish Economic Priorities.
Mastery, as the term is used here, not only includes mastery of each task in a list of tasks, but also mastery of the order in which the tasks are to be performed. Causes of performance deficiency are described, not all of them pertain to training.

ED194829
Gill, Roger W, What is the content in "content validity"? Paper presented at the Annual Convention of the American Psychological Association, (Montreal, Quebec). 1980:12p.
Recognition of content validation as an alternative method to predictive validation in justifying work samples. Confusion over whether content validity should refer to the representativeness of the work sample in terms of tasks to be performed, or behavioural aspects of work performance. Use of in-basket exercise with lower-middle level managers is the work sample used.

Goad, Tom W, Delivering effective training, California: University Associates, 1982. 183p.
Identifies five phases of training; analyse, design, develop, conduct, evaluate, looks at each phase in detail, covering such topics as C.A.I. audio-visual aids, how to set training objectives and how to evaluate training.

Goldstein, I L, "The pursuit of internal and external validity in the evaluation of training programs," Public Personnel Management, Nov/Dec. 1979:416-427.

Goldstein, I L, "The pursuit of validity in the evaluation of training programs," Human Factors, v.20, n.2, 1978:131-144.

Goldstein, Irwin L, Training: program development and evaluation (Behavioral Science in Industry Series II) Monterey: California: Brooks-Cole, 1974.

Goodell, Francis C, "Lest we trainers forget," Training and Development Journal, (USA), May 1969: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 263-264.
Intuitive judgment is not enough for evaluation.

Gordon, Alan, How to choose school leavers for jobs, Institute of Manpower Studies No.1. Aldershot, Hants: (UK) Gower, 1984.

Goslin, R C, "Defining contexts and procedures for effective evaluation of course programs," International Review of Administrative Sciences, v.42, 1976:59-67.

Grede, John, "Employability profile," Journal of Studies in Technical Careers, v.5, n.3, Summer 1983:233-238.
Describes an employability profile that lists test scores on some competencies useful to employers. It is presented as a one-page profile form and can be used as a record by youth and adults looking for entry-level jobs.

Green, Samuel B and Thomas Stutzman, "An evaluation of methods to select respondents to structured job-analysis questionnaires," Personnel Psychology, v.39, n.3 Autumn 1986 543-46.
Evaluated methods for selecting respondents who would respond accurately to items on a job-analysis questionnaire. One method involved obtaining from employees measures that assessed background, performance, and organizational information. A second method involved collecting job-analysis data from all potential job analysis respondents and selecting a subsample from them.

Greenan, J P and R D Amick, "Needs of vocational programs in teaching interpersonal skills," Journal of Studies in Technical Careers, v.8, n.1, 1986: 25-32.
While most vocational educators agree that interpersonal relations skills are important, there is a dearth of pertinent assessment strategies and procedures in secondary vocational preparation programmes. This study attempted to determine how and where assessment information could be used to improve the quality of vocational programmes. One of the results of the survey is the recommendation to develop a standardised instrument which could aid instructors in identifying areas in which students could improve, and in modifying the curriculum to achieve this goal.

Grenough, John L and Roy W Dixon, "Using 'utilization' to measure training results," Training, v.19, n.11, Nov 1982: 61- (3p).

Gripton, Jill and Alan Cowling, "Evaluating selection tests," Training Officer, v.22, n.8, Aug. 1986: 239-240,242.

Gronlund, Norman E, Stating objectives for classroom instruction, 3rd edition, New York, Macmillan, 1985: viii, 79p.
This is a practical guide for preparing instructional objectives for use in classroom instruction. It describes how to state instructional objectives as intended learning outcomes and how to define the objectives in terms of student performance. That is, in terms of what students can do to demonstrate that they have learned. The procedures are illustrated throughout with sample objectives in teaching, testing, evaluation, and marking and reporting is also described and illustrated. The third edition contains some new material. Includes a chapter on using the Taxonomy of Educational Objectives.

Gropper, George L and Paul A Ross, "Instructional design," in: Training and development handbook: a guide to Human Resource Development, 3rd edition, edited by Robert L Craig, New York, McGraw-Hill, 1987: 195-216.
Gives a short history of Instructional Design, a term that first appeared in the 1960s. Early Instructional Design approaches rested on learning principles from behavioral psychology. Subsequent Instructional Design approaches have added different analytical approaches from psychology (some behavioral, some cognitive and some a mixture of the two). They all equate analyzed learning requirements with "conditions" and training approaches with "treatments." All current Instructional Design models consist of formal rules for matching these conditions and treatments.
The second part of this article is longer. It gives details about the tasks in Instructional design. Each task has its distinctive purpose. Each employs different methods, and each produces distinctive results. The tasks include "needs analysis," "task description," "task analysis," "sequencing," "stating objectives," "developing tests," "formulating instructional strategies," "developing materials," and "formative evaluation."

ED174764
Gross, Ronald and Samuel C Brightman, A focus on responsibility - adult educators confront America's future: An interpretative report of the National Adult Education Conference (Portland, Oregon), New York: College Entrance Examination Board, 1978. 12p.
Adult education issues discussed at a national conference. The "5E" theme; employment, ethics, education, environment and energy presentations given; responsibility for basic adult education, national policy, the coming decade of adult education; opportunities for educators, competency-based adult education; industrial training opportunities, recruitment and development of volunteers learning resources, international perspective, adult education in armed services, working with the aging etc...

ED277433

Grulick, Larry, The DAPLAN process: a training manual, Florence S C, Florence-Darlington Technical College, 1986: 47p.
Prepared for use in South Carolina's technical and community colleges to promote the development or revision of a long-range plan, this manual describes a plan-development process using the basic techniques of the Develop a Curriculum (DACUM) process and revising them into a procedure for Developing A Long Range Plan, the DAPLAN process. DAPLAN consists of an analysis of the organization's needs developed through a modified brainstorming process by a panel of top-level administrators from the college under the direction of a qualified facilitator. The product of the process is a chart of major categories that describe the ultimate two-year technical college combined with characteristics and actual goals used to direct the institution. Chapter I of the manual presents background information on the DAPLAN process and its initial application at Florence-Darlington Technical College (FDTC), including a definition, historical background, an explanation of the use of the DAPLAN chart and the role of the DAPLAN facilitator, and information on the manual. Chapter II offers information about convening a 2-day brainstorming workshop, covering selection of panel members, workshop schedule, costs and budgeting, physical arrangements, workshop personnel, and support staff. Chapter III is devoted to the role of the DAPLAN facilitator in promoting group interaction; orienting the panel; presenting an overview of the entire DAPLAN process; leading the panel; guiding the panel in refining goals statements; obtaining closure; providing follow-up activities; and evaluating the DAPLAN process. After chapter IV explains how the DAPLAN chart is used in the development of a 5-year plan, chapter V describes how DAPLAN can be used in an annual critique and updating process. FDTC's annual plan for 1985-86 and DAPLAN chart are appended.

Habib, Waqar, "Problems in determining training needs in an organisation," Training and Development Journal, (USA), v.24, n.7, 1970:44-48.
Looks at problems associated with various survey approaches; organisational analysis, job analysis and manpower analysis, then moves on to problems with methodology or technique; interviewing, observation, data/records review and questionnaires.

Hadley, Jeff, "Setting standards of performance," Modern Management, v.1, n.1, Winter 1986: 24-26.
In an approach to setting objectives, differentiates between setting levels of performance and setting targets.

Hall, G E and H L Jones, Competency-based education: a process for the improvement of education, Englewood Cliffs, N.J., Prentice-Hall, 1976.

Hamblin, Anthony C, Evaluation and control of training, New York: McGraw-Hill, 1974. 208p.
Concentrates on the "real world" problems of the training specialist, emphasising the integration of evaluation with training, and of training with management. Cites six methods of evaluation; the

ultimate value (or cost-benefit) approach, the organisation development approach, the job-related approach, the learning-centred approach, the reactions-centred approach and the training-centred approach.

Hannah, Larry Stanley and John U Michaelis, A comprehensive framework for instructional objectives: a guide to systematic planning and evaluation, Reading, Massachusetts: Addison-Wesley, 1977: 223p.
A framework for instructional objectives that was developed with the cooperation and assistance of teachers; one that has proved helpful to them in their teaching. It is primarily a guide to writing objectives, preparing questions that focus on objectives, and preparing related assessment devices. It may also be used as a guide to the sequencing of lessons and units so that the students move from knowledge to operations on knowledge that involve increasingly more complex processes, to greater independence in development of skills, and to higher levels of commitment insofar as attitudes and values are concerned.

ED192165
Harlan, Anne, George Klemp and Mary Lou Schaalman, The assessment of occupational competence. I. Competence assessment in personnel selection: current practices and trends, Boston:McBer and Co., 1980: 191p.
One of seven sections of a report examining the assessment of occupational competence. Presents competence assessment as it is defined in practice by selection techniques currently used by employers. Questions such as "Do employers select on the basis of the competencies they desire in job applicants?" are asked.

Harless J, "An analysis of front end analysis," Improving Human Performance, v.2, 1973: 229-244.

Harless, Joe, "Front-end analysis," Training, March 1975: 27- (6p).
An interview with Joe Harless.

Harmon, Paul, "Developing performance objectives in job training programs," Educational Technology, November 30, 1968: 11-16.
Suggests a structured approach to getting instructors to prepare performance objectives, warns against pitfalls.

Harper, Eon, "Evaluation as a client service," Journal of European Industrial Training, v.9, n.4, 1985: 9-11.
This article considers the processes involved in designing an evaluation as a client service up to the stage of production and agreement of the evaluation schedule, which is a term coined by the author to coincide with the term "blueprint" used in architecture. The evaluator produces a designn, but does not necessarily carry out what has been designed in practice - the implementation of the evaluation can be left to others who follow the evaluation schedule. The

evaluator may act as a consultant to this team during the implementation stage (like an architect does with builders) or may direct the evaluation, depending on client requirements.

Harper, Stephen C, "Adding purpose to performance reviews," Training and Development Journal, (USA), v.40, n.9, Sept 1986: 53-55.
The handling of performance reviews reflects how a company is managed and how its human resources are viewed by managers. The points made in this article can help you towards a more effective system.

Harris, R, McI and R B Hobart, "Occupational educators and industrial trainers in Australia," Journal of Studies in Technical Careers, v.4, n.2, Spring 1982:116-125.
The authors report on the use of competency-based instruction as a tool in the professional development of postsecondary occupational educators and industrial trainers in Australia.

Harris, Roger, "Spring or Indian Summer: competency-based approaches in Australian post-secondary education," Australian Journal of Adult Education, v.22, n.2, July 1982:3-11.
Suggests several areas in Australian adult education and training where a competency-based educational model would have application. Areas include the professional development of staff in educational institutions and industrial training establishments, training of educational administrators, vocational training of college students, and the development of functional literacy of adults.

Harrison, Edward L, Paul H Pietri and Carl C Moore, "How to use nominal group technique to assess training needs," Training, v.20, n.3, March 1983: p30,32,34.
This method is called the Nominal Group Technique because it uses a group of people who "nominate" problems and issues that deserve attention, then several of the traditional needs assessment methods are combined. The Nominal Grouping Sequence is: (1) listing, (2) recording, (3) collating and (4) prioritizing.

Hawes, Jon M et al, "Evaluating corporate sales training programs," Training and Development Journal, (USA), v.36, n.11, Nov. 1982:44-46,48.
Sales training programs require continual evaluation. The authors present a conceptual model of the interrelationships of planning, training, evaluation, and modification (IPTEM) in corporate sales training programs.

Henderson, Richard I, Practical guide to performance appraisal, Reston, Virginia: Reston, 1984. 404p.
This book focuses on the actions an organisation must take to design, build and operate a performance appraisal program that is strong enough to withstand whatever load the organisation expects it to carry. Specifically investigated is the possibility of using performance appraisal for only one or two purposes, because the conflicts that

arise between alternative uses can damage an appraisal program. Possible uses include: 1. Compensation-related decisions; 2. Training purposes; 3. Employee development purposes; 4. Analyzing and validating selection criteria; 5. Making employee movement decisions; 6. Organizational planning. The book considers strengths and weaknesses of various appraisal systems, human barriers to effective appraisal of performance, the interview process, and influences on job performance. Management-by-objectives is considered, as are objectives-setting and goal-setting processes. Problems that particular strategies can run into, are cited from the author's own experience.

Hiebert, Murray B and W Norman Smallwood, "Now for a completely different look at needs analysis," Training and Development Journal, (USA), May 1987: 75-79.
This article points to situations in which the objectivist approach to training needs analysis fails. This occurs when the environment is dynamic, or when the training cannot be described in behaviorally subdivided terms. The interpretive approach is recommended when there are multiple definitions of the situation. The interpretive approach is described and 3 tables set out the differences between the objectives approach and the interpretive approach.

Hilowitz, Janet, Tracer studies as tools for identifying training needs: an evaluation, Geneva, ILO Training policies discussion paper, 1982: 77p.

ED263327

Hoggard, David and Melvin J Pedras, Utilizing the DACUM process in the development of a CAD curriculum, paper presented at the American Vocational Association Convention (Atlanta, GA., Dec. 6-8, 1985).
Originally created in the late 1960s, DACUM (Developing a Curriculum) is a method for conducting an occupational analysis that identifies the tasks that must be performed by persons employed in a specific job or occupational area. As a result of the occupational analysis, a profile chart is developed that identifies the duties and tasks associated with the occupation being analyzed. The process involves use of a group of expert workers from the occupational area who are guided through a brainstorming session to reach consensus on the skills required for successful workers in that occupation. The DACUM process is quick (two to three days), inexpensive ($500 to $1,000) in comparison to traditional occupational analysis, and has excellent public relations value. The competency profile can be used in development of competency-based instructional programs. Clark County Community College used the DACUM process to develop a computer-assisted drafting (CAD) program. A panel representing supervision and workers/technicians was established. This panel modified a description of a CAD technician and identified the duties and appropriate tasks. These duty and task statements were organized in a logical sequence (profile chart). (The CAD profile chart is appended).

Horton, George R "Dick", "Training needs assessment: a case study," Performance and Instruction, v.23, n.2, March 1984: 5-8.
Presents case study findings of a training needs assessment undertaken to find out the training implications of implementing a system of quality assurance at the Fridley Minnesota plant of Onan Corporation which manufactures electric generator sets and switch gear.

House, Ernest R, "Assumptions underlying evaluation models," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 45-64.

Huber, V L, "Training and development: not always the best medicine," Personnel, v.62, n.1, 1985:

ED192170
Huff, Shiela M et al, The Assessment of Occupational Competence 6. Summary: a synthesis of issues, Boston, Mass, McBer & Co. July 1980: 85p.
The final chapter of a seven-section report that examined the assessment of occupational competence. This chapter explores the key patterns and commonalities that have emerged from the study of occupational competency assessment. The chapter begins with a synthesis of the state of the art of competency definition and measurement under four topic headings: definition of competence (what is measured), derivations of competence variables (how hypothesized competencies are identified), the measurement of competence, and the validity of competencies defined. The synthesis is followed by an in-depth discussion of the themes which emerge from the points of view of the various components of the human resource development system: the consumer, the educational system, licensing and certification, employers, the federal government, and the research and development community. The third major portion of the chapter examines key countervailing forces which present problems for advancing the practice of defining and assessing competence. The concluding section discusses what the actors in the human resource development system can do to improve the practice of competence assessment through economic incentives, law and regulation, dissemination, government practice, and program evaluation. (Other sections of the report are available separately - see note. The first is an overview; the last is a synthesis of issues). (Note: for related documents see CE 027 159-164 in the Eric database.)

ED213827
Hull Daniel M et al, Development of safety and health instructional materials. Final report, Waco, Texas:Center for Occupational Research and Development Inc. 1982. 53p.
Design and development of pre-employment vocational training curricula incorporating safety and health instruction. Identification of training needs and specific content areas. Development, evaluation and revision of fifty instructional modules, and seven instructor resource guides for selection and implementation of training in specific safety and health areas.

Hunt, G J F, "NEBEAT - The systems approach updated," Programmed Learning and Educational Technology, v.21, n.11, Fall 1984:53-60.
An information processing curriculum design and delivery model called NEBEAT, (Needs Based Education and Training), is described in relation to behaviorally based systems models. Four major components of curriculum design are examined as features which differentiate NEBEAT from its antecedents.

Hunt, Graham J F, "Needs assessment in adult education: Tactical and strategic considerations," Instructional Science, v.15, n.3 1986: 287-296.
Examines differences between needs assessment (process of determining the gap between what is and what should be) and task analysis (definition and classification of tasks to improve job performance) and discusses the human productivity model NEBEAT (Needs Education and Training Model) which defines competency as synthesis of processes and products.

ED277896
Hymel, Glen M, The case for criterion-referenced/modular-based instruction in business, industrial and military settings, paper presented at the annual meeting of the Mid-South Educational Research Association (Memphis, TN, November, 1986) 22p.
This paper advances the argument favoring criterion-referenced/modular-based instruction (CRMBI) as applied to training and educational efforts in business, industrial, and military settings, CRMBI is defined as an instructional delivery system (along with the concomitant curriculum design and instructional materials development implications) that accommodates the following themes: (1) predetermined learner outcomes; (2) prerequisite learner background; (3) instructional sequencing; (4) criterion-referenced evaluation; and (5) flexible student entry and exit points. The proliferation of the professional literature in this area over the past 20 years points to increasing acceptance of CRMBI, in particular in teaching risk-oriented technical skills and in the multitude of diverse training situations to which CRMBI has been directed. Finally, a variation of CRMBI that is small group-based and flexibly teacher-paced is presented as an optimal instructional management tool that maximizes time flexibility for the student in a responsible way. A seven-page reference list is provided.

Inderlied, S D and D L Bates, "A practical approach to determining training solvable problems," Personnel Journal, v.59, n.2, Feb 1980:121-125.
Discusses a three-step model for diagnosing supervisory training needs. Major steps included in the model are (1) data collection (divided into two phases) (2) diagnosis, and (3) separating the problems.

Industrial Training Research Unit, Trainability assessments: Electronic assemblers, Cambridge: Industrial Training Research Unit, (1974?). 17p.
Deals with trainability testing research done at Pye Telecommunications Limited on an electronic wiring task. Covers the exercise from the test's construction to its validation both for training and on the job. Appendices contain the test itself and details of the assessment procedure.

Industrial Training Research Unit, Trainability tests: a practitioner's guide, Cambridge: Industrial Training Research Unit, 1977.

Instructional design: principles and applications, edited by Leslie J Briggs, Englewood Cliffs, N.J., Educational Technology Publications, 1977.

Jala, Tom, "Getting on TRAC(K), or how to end the band-aid approach to training," Canadian Vocational Journal, v.15, n.3, 1979:21-28.
TRAC = Training Resources Applied to Coal.
Description of a case study application of TRAC1, a systems engineering approach, was used including the application of 'anasythesis' (analysis, synthesis, modeling and simulation) and DACUM methods were used.

Jones, Alan and Peter Whittaker, Testing industrial Skills, Epping, Essex: Gower, 1975. 195p.
A manual on how to develop and administer tests, how to assess test performance and administer tests and how to interpret and use test results. Includes many examples such as trainability, work sample, hands-on and hands-off tests and stipulates the importance of successful performance over what the individual thinks he or she can do. Assessment/evaluation take the form of marking, checklists, etc... as a way of testing an individual's performance.

Kaman, Vicki S, "Why assessment interviews are worth it," Training and Development Journal, (USA), v.40, n.5, May 1986: 108-110.
This article concentrates on the interview part of a needs assessment. It starts with a discussion on the advantages of interviews, and continues with details on how to interview effectively.

Kane, Jeffrey S. "The Evaluation of organisational training programmes," Journal of European Training, v.5, n.6, 1976: whole issue, 290-338.
A general approach to selecting optimum designs for the evaluation of organisational training programmes is developed on the basis of an exposition of considerations entering into evaluations. This focuses on what emerges at the three stages of the process of arriving at the choice of design. The first stage involves the resolution of the purpose (formative or summative), focus (internal or external outcomes), and goal orientation (goal-centred or goal-free) of the evaluation. In the second stage the subset of evaluation designs that are feasible in light of organisational constraints are identified. The feasible design alternative with the highest net utility, as assessed through a procedure known as multi-attribute utility scaling that is applied in the third stage, is then selected for use. After a brief divergence for the purpose of setting forth the standards that should be strived for in the development or choice of criteria for training success, the paper concludes on a cautionary note concerning the evaluator's responsibility for engendering the legitimate use of his findings by policymakers (author abstract).

Kaufman, R, Identifying and solving problems: a system approach, 3rd edition, San Diego, University Associates, 1982:

Kaufman, Roger, "A needs assessment primer," Training, v.41, n.1, Oct. 1987: 78-83.
A ten-step approach to help beginners with this necessary, yet often dreaded task.

Kaufman, Roger and Donald L Mitchell, "Risk and training," Performance and Instruction, v.21, n.2, Mar. 1982:4-7.
Suggests that trainers take innovative approaches to training clients who work in high-risk jobs such as the military and recommends that external needs assessment, front end analysis, and task analysis be used to establish training goals and objectives. Nine references are listed.

Kaye, Michael, "The myth of program evaluation," Training and Development in Australia, v.12, n.4, Dec. 1985:11.
It is not the program as such, but rather the objective which constitutes the subject-matter of evaluation. The program is a tool, it is not the tool that should be evaluated but the way in which it is used.

Kayloe, Alvin G, "A method for evaluating the effectiveness of technical training," Training and Development Journal, (USA), June 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 97-103.
A report from Air Force training with applications in other training.

Kelly, Charles M, "Reasonable performance appraisals," Training and Development Journal, (USA), v.38, n.1, Jan. 1984: 79-82.
Performance appraisals, no matter how well thought out, always seem to cause hard feelings between supervisors and employees, and management only makes the situation worse by pretending that the system functions perfectly. The solution seems to lie not in claiming too much for the system but in claiming a little less.

Kenney, John P and Eugene L Donnelly, Manpower training and development, London: Harrap, 1972. 222p. 2nd ed. 1979. 288p.
Contains a good section on training needs analysis, concentrating on three main approaches; the comprehensive, the key task and the problem-centred analysis. Approaches are broken down into methods, (such as self-observation), and techniques, (such as faults analysis). The chapter on instructional design and program evaluation and briefly describes four evaluation methods; context, input, reaction and outcome evaluation.

Kenney, John and Margaret Reid, Training interventions, London, Institute of Personnel Management, 1986: xiv 354p.
This book is based on and replaces the Institute of Personnel Management's publication Manpower Training and Development, (1972). Beginning with a consideration of the nature of training and its organizational role, it continues with the assessment of organization

and individual needs, to the choice of strategy and the planning and evaluation of interventions. In the final chapter national interventions are considered as they affect both the organization and the individual.

Kilcourse, R, "Trainability testing as an aid to selection," Personnel Management, v.10, n.5, 1978:33-35, 43.
Examines some of the advantages and limitations of trainability testing in recruitment for manual work.

Killcross, M C and W T G Bates, Selecting the younger trainee, London: H.M.S.O., 1975. 26p.
Training Information Paper 8 from the Training Services Agency, this booklet looks at the basis for trainee selection, (ie: the available information on a candidate), how to use this information and typical selection studies and procedures, then assesses various selection procedures.

King, Patricia, "How to prepare for a performance appraisal interview, Training and Development Journal, (USA), v.38, n.2, Feb 1984: 66-69.
Advice to the interviewer on planning an appraisal interview.

Kinlaw, Dennis C, "Performance-appraisal training: obstacles and opportunities," Training, v.21, n.1, Jan 1984: 43-44, 53.
The people who have to do the appraising often receive no training in performance appraisal. If they can write measurable standards, the standards are often trite. If they can develop meaningful standards they aren't able to make them measurable. Managers and supervisors need training in performance appraisal.

Kirkpatrick, Donald L, A practical guide for supervisory training and development, Reading, Massachusetts: Addison-Wesley, 1971: 182p.
Practical help for line managers as well as personnel and training directors with applications in industry, business, hospitals and government. Covers reasons and responsibility for training, needs analysis, methods and evaluation, program design and trainee selection. Case examples of effective programs are included.

Kirkpatrick, D L, "Determining training needs: four simple and effective approaches," Training and Development Journal, (USA), v.31, n.2, 1977: 22-25.

Kirkpatrick, Donald L, "Evaluation," Chapter 16 in:
Training and development handbook: a guide to Human Resource Development, 3rd edition, New York, McGraw-Hill, 1987: 301-319.

Kirkpatrick, D L, "How to plan and implement a supervisory training program," Training and Development Journal, (USA), v.32, nos. 4-6,8,9, 1978.

Kirkpatrick, Donald L, "Performance appraisal: your questions answered," Training and Development Journal, (USA), v.40, n.5, May 1986: 68-71.
HRD professionals and managers alike are often foggy about performance appraisal procedures. Here are answers to some of their most common queries.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 1: Reaction," Journal of the ASTD, Nov. 1959: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 1-5 see also parts II through IV: 6-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 2: Learning," Journal of the ASTD, Dec. 1959: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 6-9. See also Part I and Parts 3 and 4 p.1-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 3: Behavior," Journal of the ASTD, Jan. 1960:
reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 10-13. See also Parts 1, 2 and 4, p1-17.

Kirkpatrick, Donald L, "Techniques for evaluating training programs: Part 4: Results," Journal of the ASTD, Feb. 1960:
reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 14-17. See also Parts 1-3, p1-13.

ED192164
Klemp, George O Jr, The assessment of occupational competence: Final report 1. Introduction and overview, Boston:McBer and Co., 1980. 28p.
Introduction and overview investigating the definition and assessment of individual competence in education and work settings. Part of a seven section report. Focus is on work performance rather than the broader concept of life performance as the target of competence. The six chapters cover such aspects as competence assessment and personnel selection, current practices and trends, and the theory, practice and implications of assessment in education.

(Knowles) "Talking with Malcolm Knowles: the adult learner is a "less neglected species," Training, v.14, n.8, Aug. 1977:16-18.
A professor of adult and community college education at North Carolina State University, Malcolm Knowles, expresses his views on adult learning in interview form. According to Knowles inservice management

development and industrial training programs, as well as public school and college programs, require a process structure of learning experiences, which he describes as a competency-based modular program.

Knowles, Malcolm S, The modern practice of adult education: from pedagogy to andragogy, Chicago, Assocation Press, Follet, 1980: 400p.
See especially chapter 6: "Assessing Needs and Interests in Program Planning," chapter 7: "Defining Purposes and Objectives," and chapter 10: "Evaluating Comprehensive Programs. Chapter 2: "What is Modern Practice?" chapter 3: "What is the Role and Mission of the Adult Educator," and chapter 4: "What is Andragogy?" together give the theoretical background to the current changes in vocational education.

Komras, Henrietta, "Evaluating your training programs," Training and Development Journal, (USA), v.39, n.9, Sept. 1985: 87-88.
Practical advice on conducting evaluations, and some pitfalls to avoid.

Kropp, Russell P and Edward K Hankin, "Paper and pencil tests for evaluating instruction," Training Directors Journal, Nov. 1962: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 220-225.
Techniques for developing and using tests.

Laan, Katrina and Alan Robertson, Manpower and training needs survey, Auckland: Institutional Training Advisory Committee, 1983. 60p.
An extensive survey of training needs for caring and housekeeping staff employed in New Zealand institutions - hospitals, education establishments, hostels, rest and convalescent homes, religious communities and prisons. The survey/interview method is used to gather information. Collation of this information forms the results of the survey. A copy of the interview schedule used is included.

Laird, Dugan, Approaches to training and development, 2nd edition Reading, Massachusetts: Addison-Wesley, 1985.

Lampe, Steven, "Getting the most out of needs assessment," Training, v.23, n.10, Oct. 1986: 101-104.
Lists 16 kinds of useful information critical to the success of training. Describes 5 categories of people who can act as information sources: subject matter experts (SMEs) intended trainees, managers of those trainees, former trainees, and clients/users. Explains which type of information can be obtained from which category of informants.

Lange, Robert R et al, "Barriers and policy solutions for statewide implementation of competency-based vocational education," Journal of Studies in Technical Careers, v.8, n.1, Winter 1986: 80-88.
Barriers to successful implementation of competency-based vocational education (CBVE) programs include misperceptions about CBVE as well as a lack of funds and support services. These barriers can be overcome with a co-ordinated effort at state level.

ED239320

Lashbrook, Velma J, An approach to designing training and development programs, Paper presented at the Annual Meeting of the Speech Communication Association, (69th, Washington, D.C.), 1983. 12p.
Systems approach to effective instructional design applicable to educational and organisational settings and including six components; needs assessment, systems design, curriculum development, organisational development, feedback and evaluation, and outcomes. Information on these components.

Latham, Gary P and Kenneth N Wexley, Increasing productivity through performance appraisal, (Managing Human Resources Series). Reading, Massachusetts: Addison-Wesley, 1981. 175p.
Practical applications of the theoretical principles of goal setting, reinforcement, role clarity and team building. Includes examples of appraisal systems such as the trait-oriented performance appraisal rating and behavioural observation/expectation scales.

Lawrence, D, "The curriculum, DACUM and the future: beware of the camel's nose," Tutor, v.29, Nov. 1984:34-37.
The advantages and disadvantages of one form of job analysis - the DACUM process.

Lawrie, J W and Clayton W Boringer, "Training needs assessment and training program evaluation," Training and Development Journal, (USA) Nov. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 291-294.
A training planning process with measurement at both input and output stages.

Leach, John J, "Organization needs analysis: a new methodology," Training and Development Journal, (USA), v.33, n.9, Sept. 1979: 66-69.
Training needs analysis can miss the mark unless there is some insight (and data) into the firm's evolution and its new requirements. Organisation shifts in direction and purpose may not be known to trainers, and may even not be known to the firm's leadership. This "incubation" period can last for several years, while trainers train for yesterday's needs. In an earlier article (see Leach Oct 1977) the writer developed the "Career of the Organization" exercise. It quickly became evident that the exercise was tapping into needs analysis areas relating to both individual and organization development. In this article the usefulness of the exercise finding to the training function is discussed.

Leach, J, "The career of the organization," The Personnel Administrator, Oct, 1977:
This article forms the basis for Leach's 1979 article on "Organization needs analysis: a new methodology," see above. This article is not about needs assessment, but it does introduce concepts that are a useful addition to the human resource planner's tools for front end analysis and strategy planning.

Lerda, Louis W and Leslie W Cross, "Performance oriented training - results measurement and follow-up," Training Directors Journal, Aug. 1962: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 210-215.

Lester, Richard I, "Criteria for evaluating training materials," Training and Development Journal, (USA), Aug. 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 33-36.

Lewis, James M, "The whens, whys and hows of behavioral objectives," Training, v.18, n.3, March 1981: 60-62.
A "do do, don't do" checklist for using behavioral objectives which has been culled from research into the effects of using behavioral objectives.

ED206646
Lockwood, Robert E, A procedure to select and rank qualified applicants using perceived item difficulty and perceived item relevance, Paper presented at the Annual Meeting of the National Council on Measurement in Education, (Los Angeles), 1981. 16p.
Proposal of a two stage cutting score procedure to replace traditional minimum competency testing in personnel selection. Only a subset of the usual test items assessing job related skills are used to determine the cutting score and identify qualified applicants. A high number of essential and useful items identified indicates a qualified applicant. A rational methodology for producing an eligibility list is produced.

ED201853
Long, Diana, Masonry student material. Competency-based education curriculum, A curriculum organised into twelve modules, which each comprise two to nine competency statements. There is a student competency sheet for each competency with a performance guide, learning activities and an evaluation. A teacher's guide is available separately.

Lott, O C, "Evaluation to reduce training costs," Training and Development Journal, (USA), Jan. 1967: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 244-246.

ED205724
Lund, Brishkai and Sandy McGechaen, C E programmer's manual, Vancouver, British Colombia University, Centre for Continuing Education, 1981. 155p.
Reference guide for continuing education planners providing basic information on DACUM and delivering such programs. Outline of seven areas of competence for programmers: assessment of community needs,

planning of courses and programs, promotion and marketing of courses and programs, management of personnel, practice of communication skills and evaluation of conduct.

Lusher, Brian and Alan James, "Appraisals: changing directions," Journal of European Industrial Training, v.5, n.7, 1981: 12-15.
This article deals with experience over some three years in changing the role, content, format and procedures of a formal appraisal system in a large, international manufacturing company. It covers the reasons why change became necessary, the means by which the changes were agreed and implemented and an interim judgement of the effectiveness of the changes. The lessons learned by the specialists are stated.

McCormick, Ernest J and Daniel R Ilgen, Industrial psychology, 7th ed. New Jersey: Prentice-Hall, 1980. 464p.
(See also 7th ed. Sydney: Allen & Unwin, 1981).

McCormick, Ernest James, Job analysis: methods and applications, New York: AMACOM, 1979.
A comprehensive study of human work, (defined as job analysis). Covers various methods of job analysis, including the more recently developed systematic or structured methods. It also includes a discussion on the use of data gained, in relation to practical objectives.

McDermott, Frederick M, "Try brainstorming - a quick route to job analysis," Training, v.19, n. , March 1982: 38- (3p).

ED263380
MacFarland, Thomas W, A behaviorist strategy to improve vocational outcomes by promoting moderate goal setting. Florida, position paper 120, Dec 1985: 9p.
Research has shown that tasks of intermediate difficulty generally elicit the greatest efforts on the part of students. For this reason, teachers are advised that the use of moderate goal setting is one of the most effective means of ensuring favorable vocational outcomes. The general paradigm of achieving vocational success through moderate goal setting is as follows: analyze industrial and personnel needs; determine terminal objectives (by questioning and observing behavior); formulate and present enabling objectives (using the techniques of task analysis and linear programming); and assess student performance (by administering criterion-referenced tests). Although some critics of the behaviorist approach believe that this approach delegates educators to the role of mere classroom managers, practice has shown that the objectivity of the behaviorist approach lends support to the high degree of professionalism required if educators are to achieve desired vocational outcomes successfully.

McKenna, Douglas D et al, "How to build a training structure that won't keep burning down," Training, v.21, n.9, Sept. 1984: 77-83.

ED255761
McKinney, Floyd L et al, Critical evaluation for vocational education, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985.24p.
Problems associated with efforts and ways of evaluating vocational education, such as disagreement over the role and function of vocational education, and insufficient consideration of the educational and community setting. Puts forward a new approach, critical evaluation, which directly addresses the issues raised by individuals in the local setting as being necessary for program change, and relies on quantative and qualitative data to develop action plans for program improvement.

Macklin, Nigel Eyre, A descriptive analysis of DACUM as a system for curriculum design in post secondary education, Coquitlan, B.C., the Author, 1985: vii, 88p.

McNicol, Bill, "How chemical analysts broke down the job," Transition, May 1986: 22-24.
A case study report of the way in which the Chemical Industries Association (CIA) arrived at a Standards-based programme for training. The needs analysis technique used was focus and concensus groups. They arrived at a task analysis described in sufficiently general terms to serve as a skeleton for any job in the industry.

Madaus, George F, Daniel L Stufflebeam, and Michael S Scriven, "Program evaluation: a historical view," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 3-22.

Mager, Robert F, Goal Analysis, 2nd edition, Belmont, Calif.: Pitman Learning, 1984: viii, 139p.
The goal of this book is to help you know when and how to do goal analysis, which means: 1. be able to identify statements that describe abstractions and those that describe performances, 2. Having identified a goal that you consider important to achieve, be able to describe the performances that represent your meaning of the goal. In other words, be able to describe specific outcomes that, if achieved, will cause you to agree that the goal is achieved.

Mager, Robert F, "Industry's training methods: do they have a place in academe?", Engineering Education, v.72, n.2, Nov. 1981:148-153.
Summarizes key differences between academic and industrial settings and offers illustrations of what modern instructional craft has accomplished in industry. Describes a typical developmental sequence related to criterion-referenced instruction, including techniques for instructional analysis, design, development, and implementation. Includes recommendations and applications of these procedures to academia.

Mager, Robert Frank, Instructional module development, Los Altos Hills, California: Mager Associates, 1977.

Mager, Robert F, Measuring instructional results, 2nd ed. Belmont, California: Pitman Learning, 1984. 166p.
Designed for people who want to know how well their instruction works and how to develop the basic tools to measure instructional results. Establishes that the measurement of success is accomplished mainly through the development of test items that match each objective in scope and intent. Concentrates on criterion-referenced evaluation methods to gauge performance.

Mager, Robert Frank, Preparing instructional objectives, Revised 2nd ed. Belmont, California: Pitman, 1984. 135p.
An objective describes the intended result of instruction rather than the process of instruction. Useful objectives describe 1. performance (what the learner is to be able to do) 2. conditions (important conditions under which the performance is expected to occur) and 3. criterion (the quality or level of performance that will be considered acceptable). Using a layout intended to facilitate learning, this book guides you through the process of recognizing and writing objectives. Examples to practise on are included.

Mager, Robert Frank, Troubleshooting the troubleshooting course, California: Pitman, 1982. 201p.
How to detect errors in what is taught and how it is taught in courses designed to teach equipment maintenance. Covers setting up a training programme for "troubleshooters" and includes flow diagrams and skill hierarchies.

Mager, Robert Frank and Kenneth M Beach Jr, Developing vocational instruction, Palo Alto, California: Fearon, 1967.
How to use a systematic course development process to facilitate students' learning.

Mager, Robert F and Peter Pipe, Analyzing Performance Problems, 1st edition, Belmont, California, Fearon Pitman, 1970, 109p.
Performance problems may be due to a lack of training or they may be caused by obstacles to correct performance that have nothing to do with a skill deficiency. The authors explain how to distinguish between the two types of performance problem. They ask if the person has the skill and is out of practice, or, whether performance of the skill is punishing, whether non-performance is rewarded, whether the person thinks the performance matters, or whether there are obstacles to the performance. Using the method described here the job analyst can distinguish between those situations where a training course will solve the problem, and those where such a course will not solve the problem.

Maginn, Michael, "Try competency-based instruction," Training, v.15, n.8, Aug. 1978: 80- (3p).

Mallory, W J, "A task-analytic approach to specifying tech training needs," Training and Development Journal, (USA), v.36, n.9, Sep. 1982:66-68, 70-73.
This article explains a performance-oriented approach to outlining technical training needs. The performance improvement cycle is

discussed and the three main activities in that cycle are described. They include need detection, task identification, and collection of task performance data.

Manpower Services Commission, Training Services Division, Trainability Testing, (People and Work series) London: Manpower Services Commission, Training Services Division, 1979.

Mansfield, Bob, "Getting to the core of the job," Personnel Management, Aug. 1985: 30-33.
Core analysis is a method of defining the essential components of a job using a reference list of skills. The article describes how the technique can be helpful in performance appraisal and in defining training needs.

Mansfield, Bob and David Mathews, Job Competence: a description for use in vocational education and training, Blagdon, Bristol, Further Education Staff College ESF Core Skills Project, 1985. 8p.
This leaflet offers an operational definition of job competence; including competence in a job and/or a range of occupational skills, and, competence in a range of transferable skills. As well as referring to competence in carrying out tasks, job competence refers to task management (order in which tasks are carried out, trouble shooting etc.) and to role/job environment (people skills, safety skills etc.).

Markowitz, Jerrold, "Four Methods of Job Analysis," Training and Development Journal, (USA), v.35, Sept. 1981: 112-118.
The four methods discussed are observation, interview, jury of experts and questionnaires. There is no one best method. The quality of the method depends on the expertise of the person using it, and a variety of other factors; such as organizational philosophy, needs, goals, money, personnel and time factors.

Markowitz, Jerrold, "Managing the Job Analysis Process," Training and Development Journal, (USA), August, 1987: 64-66.
Describes the method used to analyze jobs by the U.S. Coast Guard. A panel of experts generates a list of job tasks. A questionnaire was also used.

Mason, Mike, "Systems approach," Tutor, 33, Nov. 1986: 70-72.
The systems approach described briefly. It includes analysis of the training need, the training objective and development of instruction.

Mathews, David and Bob Mansfield, Occupational standards: job competence and the measurement of achievement, Blagdon, Bristol, Further Education Staff College ESF Core Skills Project, 1985: 9p.
This leaflet explores the nature of existing occupational standards and the functions that new types of occupational standards should serve. It shows how the description of standards can vary according to the function for which they are used. It further investigates whether job

competence might offer a basis for defining and using occupational standards. Job competence is taken to comprise three components concerned with tasks, task management and the role/job environment.

Merrill, P F, "Task analysis: an information processing approach," NSPI Journal, v.15, n.2, 1976: 7-11.

Michalak, Donald F, "The neglected half of training," Training and Development Journal, (USA), v.35, n.5, May. 1981:22-28.
Evaluates the effects of various maintenance-of-behaviour activities as experienced by supervisors of an industrial organization. Includes lists of activities, conclusions, and recommendations.

Michalak, Donald F and Edwin G Yager, Making the training process work: A practical guide to better training programs, New York: Harper & Row, 1979. 152p.
Covers training responsibility, needs and task analysis, training objectives program design, conducting the training and evaluating it. The needs analysis section uses a hybrid model which distinguishes "can't do" problems, (lack of skill/knowledge), from "don't do" problems, (motivational). Six other techniques are also outlined. Three evaluation methods are used; control group, placebo training and random sampling.

ED226141
Middleton, M A, Task analysis and validation procedures of DACUM, Victoria, British Columbia: British Columbia Dept. of Education, 1981. 101p.
Study of difficulties associated with the DACUM process of the British Columbia Ministry of Education through task analysis of a hunter's job. Establishment of a set of procedures designed to improve DACUM. Use of task statements, distributed for response and then examined. Provides information on relative importance of tasks.

Mindel, Richard, Final report of an experiment to examine the use of trainability tests in skillcentres, London, Manpower Services Commission, Psychological Services, 1979: 54p.
Trainability tests were well received by management, staff and trainees at Leicester Skillcentre. Such tests are now available in at least 5 trades for use as predictors of an individual's success on training courses. Also the research has highlighted a new role for using trainability tests (work sample tests) in a guidance capacity. They give individuals a taster of their trade at an early stage, which helps when choice of occupation is made.

Minimum competency achievement testing: models, measures and consequences, edited by Richard M Jaeger and Carol K Tittle, California, McCutchan, 1980.

Mirsberger, Gerald E, "The four crucial phases of evaluation," Training, Aug. 1974: 34-35.

ED254744

Mitchell, Gary and Ralph Carlson, Identification of electronics competencies in vocational programs: Final report, Spokane, Washington: Spokane Community College, 1984. 21p.
A project conducted to identify the electronics competencies required of entry-level employees in several occupations, using the survey method. Evaluation of survey data suggested that various vocational disciplines might be separated into two categories - servicing ad non-servicing, depending on whether the employee is required to analyse, maintain or repair electronics-based equipment. A list of the technology requirement ratings of various occupations is included.

Mitchel, Elizabeth J and Albert C Hyde, "Training demand assessment: three case studies in planning training programs," Public Personnel Management, Nov-Dec 1979: 361-373.

Mitchell, Lindsay, Competency testing: towards a definition and operationalisation, Scotland, unpublished paper, 1987: 14p. (apply to Vocational Training Council Library).

Monjan, Susan V and Susanne M Gassner, Critical issues on competency-based education, New York: Pergamon Press, 1979.

ED253645

Moock, Lynn D, Electronics/robotics displaced workers retraining and technician upgrade training. Ohlone College Investment in People Project 1983-1984. Evaluation report, California: Ohlone College, 1984. 47p.
Applying the user-focussed process of evaluation, an evaluator studied the effectiveness of the displaced worker entry-level and the upgrade components of the electronics/robotics training program. Those involved were surveyed, interviewed and given questionnaires. Of the twenty eight displaced workers who began training, eighteen completed the program. The assessment process provided a good indicator of who could succeed. Outcomes of the evaluation are discussed.

Moore, Elizabeth Randall, "Competency-based training evaluation," Training and Development Journal, (USA), v.38, n.11, 1984: 92-94.
A before-and-after performance appraisal based on competence factors measures the impact of your training programs.

Moore, M L and P Dutton, "Training needs analysis review and critique," Academy of Management Review, July 1978: 532-545.
This literature review reconsiders needs analysis data resources, measures, and research techniques in order to assess the state of the art and gaps in theory and practice. A critique of current theory and state of the art is provided. Process issues and recommendations are noted.

Morgan, Robert W, "Job Corps innovations in retrospect," Performance and Instruction, v.20, n.4, May. 1981:21-23.
Characterises the Job Corps experience as the first significant application of the systems approach to instructional development, and

discusses the project's mission, trainees, training environment, training programs, needs assessment, student learning units, group training techniques, effectiveness in preparing trainees for jobs, and cost benefits.

Morris, Michael, "The evaluation of training," Industrial and Commercial Training, Mar/Apr. 1984:9-16.

Morrissey, George L, Appraisal and development through objectives and results, Reading, Massachusetts: Addison-Wesley, 1972.

Morrisey, George L and William R Wellstead, "Supervisory Training CAN be measured 'objectively' on the job!", Training and Development Journal, (USA), June 1971: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 151-153.

Morton, Anton S and Harold W Adams, "Weighted training grades: appearance and substance," Training Directors Journal, (USA), April 1961: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 197-201.
Did the weighting system do what it was designed to do? If not, why not?

Mottram, Roger Douglas, Selecting apprentices: some problems and implications for selection and training, (A follow-up study in the electricity supply industry). Cambridge: Cambridge University/London: University College, Industry Training Research Units, 1977. 19p.

Murdick, Robert G, "Measuring the profit in industry training programs," Training Directors Journal, April 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 182-185.

ED118900

Myers, W E, Training and technology: a systems approach for industrial training, Oak Ridge Associated Universities, Manpower Development Division, 1973. 52p.
Analysis of the Training and Technology (TAT), Industrial Skill and Technical Training (ISTT), program. Presented within an input-output systems framework, the systems model that underlies industrial production. Four functions of the model; the intake process, training process, process of placement and program administration.

Nadler, Leonard, Designing training programs: the critical events model, Reading, Massachusetts: Addison-Wesley, 1982.
Presents the critical events model and discusses several other models. The CEM is an open model that continuously involves managers and supervisors in the design process. It and the book, moves through the "events" of identifying the organisation's needs, specifying job performance, identifying learner needs, determining objectives, building a curriculum, selecting a training method, obtaining training resources, conducting the training and finally, evaluating it.

Nadler, Leonard, "Using critical events to develop training programmes," Industrial Training International, April, 1971: 53-56.

ED267227
National Center for Research in Vocational Education, Develop program goals and objectives, 2nd edition, Module A-6 of Category A-Program Planning, Development, and Evaluation, Professional Teacher Education Module Series, Columbus, Ohio State University: 1986: 36p.
This module, which is one in a series of 127 performance-based teacher education learning packages - focusing upon specific professional competencies of vocational teachers, deals with program planning, development, and evaluation. The three learning experiences included in the module deal with the rationale for and the concepts involved in developing vocational program goals and objectives, developing goals and objectives for a selected vocational program within a specified service area, and developing vocational program goals and objectives in an actual teaching situation. Each learning experience includes some or all of the following: an overview, an enabling objective, instructional test, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED259205
National Centre for Research in Vocational Education, Establish student performance criteria, 2nd edition, Module D-1 of Category D - Instructional evaluation. Professional teacher education module Series, Colombus, Ohio State University. 1985, 29p.
This learning module, one in a series of 127 performance-based teacher education learning packages focusing upon professional competencies of vocational teachers, deals with establishing student performance criteria. The module consists of three learning experiences designed to (1) provide prospective teachers with a knowledge of the key factors involved in establishing criteria for student performance, (2) establish partial criteria for student performance and identify additional information and sources needed to establish complete criteria for student performance in a case study situation, and (3) establish student performance criteria in an actual teaching situation. Included in each learning experience are some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a self-check activity, and model answers to the feedback exercise. The final learning experience also includes a checklist of teacher performance criteria.

ED269616

National Centre for Research in Vocational Education, Evaluate your instructional effectiveness, 2nd edition, Module D-6 of Category D-Instructional evaluation, Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 33p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, training teachers in how to evaluate their instructional effectiveness. Addressed in the individual learning experiences included in the module are the following topics: sources of feedback (teachers, state department of education supervisors and university faculty, oneself, and students); evaluation methods (observations, checklists, videotaping, assessments of student performance, and anecdotal records); and use of feedback results. Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED272748

National Centre for Research in Vocational Education, Evaluate your vocational program, 2nd edition, Module A-11 of Category A-Programme planning, development, and evaluation. Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 58p.

This module, which is one in a series of 127 performance-based teacher education learning packages focusing upon specific professional competencies of vocational teachers, deals with developing a plan for evaluating a vocational program, performing a program evaluation, and developing a final evaluation report. Addressed in the individual learning experiences included in the module are the following topics: evaluating local vocational programs (the nature of program evaluation, key elements in a program evaluation model, and special evaluation concerns); development of and elements in a local program evaluation plan (description of the situation, statement of the evaluation philosophy and objectives, responsibilities, evaluation activities, limitations of the study, a schedule of activities, a statement of reporting procedures, and a summary of dissemination methods and plans for implementation); and preparation of the final report (presentation of data in text, tables, and figures; formulation of findings, conclusions, and recommendations; and distribution of the final report). Each learning experience includes some or all of the following: an overview, an enabling objective, instructional text, one or more learning activities, a feedback activity, and model answers to the feedback activity.

ED262292

National Center for Research in Vocational Education, Prepare yourself for CBE, Module K-1 of Category K-Implementing competency-based education (CBE), Professional Teacher Education Module Series, Columbus, Ohio State University, 1986: 67p.

This module, one in a series of performance-based teacher education learning packages, focuses on a specific skill that vocational educators need to integrate competency-based education (CBE) into the vocational education curriculum. The purpose of the module is to help

the instructor understand the educational philosophy on which CBE is based and how this is applied in practice, assess his/her readiness for CBE, and develop a plan for gaining the knowledge and skills he/she needs. Introductory material provides terminal and enabling objectives, prerequisites, a list of resources, and general information. The main portion of the module includes three learning experiences based on the enabling objectives. Each learning experience presents activities with information sheets, case studies, model critiques, inventories, worksheets, and checklists. Optional activities are provided. Completion of these three learning experiences should lead to achievement of the terminal objective through the fourth and final learning experience that provides for a teacher performance assessment by a resource person. An assessment form is included.

ED242898

National TAFE Clearinghouse, Initiatives in technical and further education: Number 7, Adelaide, Australia: National TAFE Clearinghouse, 1984. 52p.

Compilation of 137 document abstracts providing technical and further education, (TAFE) materials for teachers, counsellors, researchers and administrators. Types included: research and technical reports, evaluation studies, curriculum materials and bibliographies. Information on TAFE Clearinghouse system and its use.

National Tourism Industry Training Committee, Manual of occupational analysis, Australia: National Tourism Industry Training Committee, 1984. 100p.

A training needs analysis manual for the tourism industry in Australia using the task inventory method. Information on writing and organising the task inventory, and examples in the form of lists of tasks needed within the industry, as well as a few other jobs such as waiter, driller etc...

"Needs analysis: whose problem is this?", Training, v.23, n.9, Sept. 1986: 12,14.

Part of an editorial, this section describes initial responses to requests for needs analysis. The question is who is it that needs the training? "When a manager comes to us and points to a subordinate who is 'not performing up to standard,' we operate on the premise that at least three of the fingers on the accusing hand should be pointed in the direction of the manager."

ED216205

Nelson, Orville, and Harold Halfin, Emerging skills: implications for voc. ed. information series No. 234, Columbus, Ohio: National Center for Research in Vocational Education, 1982. 43p.

Importance of keeping up to date with technology in the U.S. Need to change skill requirements and develop new ones for new jobs. Methods for identifying new skills include: advisory committees, creative insight, DACUM, the Delphi process, evaluation studies, industrial work experience, labor market surveys, conferences and task analysis. Need for vocational programs to become more flexible.

ED255717

New York State Division for Youth, Competency-based instruction: A guide in developing youth employment competencies, Albany, New York: New York State Division for Youth, 1984. 71p.

An introduction to the development of performance standards for youth employment and training programming. Topics covered include; roles and responsibilities under the Job Training Partnership Act, the nature of competency-based programs, examples of competencies, job market studies and methods of assessment.

ED255716

New York State Division for Youth, Vocational assessment instruments reference guide. A review of interest aptitude and pre-employment/job readiness tests, Albany, New York: New York State Division for Youth, 1985. 250p.

This guide is designed to serve as a reference to assist providers of Job Training Partnership Act-funded programs in selecting appropriate interest, aptitude, and pre-employment and job readiness tests. Descriptions of 53 interest tests, 38 aptitude tests, and 37 pre-employment and job readiness tests are provided. Each description contains information pertaining to some or all of the following: year of publication, target population, reading level, scoring procedures, time required to use the instrument, instrument format, measurement scales, comments from technical reviews, and data concerning test validity and reliability. A list of publishers' addresses and a bibliography conclude the guide.

ED248342

New York State Education Department, Training and economic development: the impact of industry-specific training on business and the economy of New York State, Albany, New York: New York State Education Department. Office of Occupational and Continuing Education, 1984. 77p.

A study examined about 130 projects, which were part of New York's Short-Term Program for Economic Development, to determine their effectiveness. It was concluded that the program resulted in increases in productivity and quality or quantity of goods and services for the participating companies.

New Zealand Department of Labour, Industrial Training Service, Identifying training needs - a memo to the manager, New Zealand Department of Labour, 1983. 17p.

Brief description of three types of training needs: organisational training needs; occupational training needs; and individual training needs.

New Zealand Department of Labour, Industrial Training Service, Planning and evaluating a training programme. New Zealand Department of Labour, 1983. 19p.

New Zealand Department of Labour, Industrial Training Service, Training needs analysis: a questionnaire for management, New Zealand Department of Labour, 1982. 32p.

New Zealand Employers' Federation, Technical education and the world of work, A discussion paper. Wellington: New Zealand Employers' Federation, 1985. 32p.
A discussion paper about vocational education and its relationship with the world of work as perceived by the New Zealand Employers' Federation. It briefly covers employer philosophies, definitions, aims and general training objectives in relation to vocational education, the role of technical institutes and community colleges, training needs analysis, (recommending the DACUM process), competency-based qualifications and educational standards.

Newby, A C and P Bramley, "The evaluation of training part II: the organisational context," Journal of European Industrial Training, v.8, n.7, 1984: 17-21.
(See also Bramley and Newby "The Evaluation of training part I: clarifying the concept,").
To argue that evaluation of training is too expensive and too much trouble is an argument no different in kind from, and no more reasonable than opposition to the use of management accounting in determining future manufacturing capacity or level of service provision. The only significant difference is that accountants have been at their work longer and have developed tools and language appropriate to financial analysis. Trainers, in contrast, have largely avoided the challenge of developing an appropriate language for training analysis. The consequence has been that, by default, training is liable to be assessed only in the language of financial control.

Newstrom, J W and J M Lilyquist, "Selecting training needs analysis methods," Training and Development Journal, (USA), v.33, 1979: 52-56.

ED279910
Norton, Robert E, Competency-based education and training: a humanistic and realistic approach to technical and vocational instruction, Background paper, Paper presented at the Regional Workshop on Technical/Vocational Teacher Training (Chiba City, Japan, May 11-22, 1987). Attachment F contains small blurred print. 56p.
This look at competency-based education (CBE) begins by defining competency-based training. The five essential elements are discussed - competencies, criterion-referenced evaluation, provision for individual development and evaluation, requirement of student performance, and student-paced instruction. Facilitating or supporting characteristics are listed; these are grouped into instructional and administrative characteristics. Benefits of CBE are highlighted. Focus then shifts to identification of training program needs. A suggested comprehensive vocational education program planning model is presented. Three steps are discussed in some detail: assessing individual needs and interests (including student vocational and educational interests, student needs, student abilities, and adult training and retraining needs), assessing labor market needs, and analyzing and synthesizing existing programs and services. A discussion of development of competency-based instructional materials is followed by information on occupational

skill competency-testing, available test products and services, and test selection. Attachments include a CBE student-evaluation model, more specific information on program planning, a reference guide to writing student learning guides, and a CBE program evaluation checklist.

ED254657

Norton, Robert E, DACUM handbook. Leadership training series, No.67, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education, 1985. 203p.
A handbook designed to prepare selected people for the roles of DACUM facilitator and/or co-ordinator. Definition of DACUM.
This handbook is designed for use in workshops designed to prepare selected persons for the roles of Developing a Curriculum (DACUM) facilitator and/or coordinator. (The DACUM process is a low-cost approach to occupational analysis based on the premises that expert workers can describe their jobs better than anyone else can, any job can be effectively and sufficiently described in terms of the tasks that successful workers in that occupation perform, and all tasks have direct implication for the knowledge and attitudes that workers must have in order to perform the tasks correctly). The first part of the guide describes the scope and aims of DACUM and the role of the DACUM coordinator. Discussed next are procedures for planning a DACUM workshop and selecting DACUM committee members. Guidelines for conducting a DACUM orientation, facilitating group interaction, and constructing a DACUM chart are set forth. Concluding the guide are instructions for verifying tasks and producing a DACUM chart. Appendixes to the guide (the bulk of the document) include a brief history of DACUM as well as various sample letters, forms, charts, and verification instruments for use in implementing a DACUM workshop.

Norton, Robert E, DACUM handbook, Columbus, Ohio, National Center for Research in Vocational Education, 1985: vii, 204p.
A hardcopy version of ED254657. (See above).

ED223786

Norton, Robert E, Research and development related to future trends in the training of trainers, Columbus, Ohio: ERIC Clearinghouse on Adult, Career and Vocational Education, 1982. 26p.
Research on the training of trainers in the United States focussing on technological updating, identification of new trainer competencies: the DACUM approach and an American Society for Training and Development (ASTD) Study. Trends and developments were found in such areas as competency-based education, distance education, the changing roles of the instructor and the establishment of a National Academy for Vocational Education.

ED164746

Norton, Robert E et al, The identification and national-verification of competencies important to secondary and post-secondary administrators of vocational education. Final report: development of competency-based instructional materials for local vocational education administrators -

Part 1. Research and development series No.141, Columbus, Ohio: Ohio State University. National Center for Research in Vocational Education. 1977. 120p.
Research undertaken to identify and nationally verify competencies important to local administrators of vocational education. DACUM used to extend skills located in a literature search, and the competency statements were incorporated in a Task Inventory Instrument. Submitted to different administrators and analysed.

ED281588
Nunes, Stephen A and Thomas F Halloran, Elements for a training design: an assessment of competencies for effective ABE instructors, Fl. Miami-Dade Community College, Center for Adult Education, 1987: 13p.
The Center for Adult Education at Miami-Dade Community College (Florida) conducted a project to design a training program for adult basic education (ABE) instructors focusing on the specific skills and generic competencies that were associated with instructor success. The best source of information about the elements that constituted a successful ABE instructor was felt to be a group of ABE instructors who were perceived to be successful. "Successful" ABE instructors were nominated by administrators and other instructors to participate on a panel that was to identify and classify the skills and competencies which, in their estimation, constituted successful performance. Using the DACUM (Developing A Curriculum) process, the panel reached consensus on the following competencies and their rank order: (1) understanding the adult learner; (2) personal qualities; (3) knowledge of the field; (4) knowledge of teaching techniques; (5) creativity; (6) communication/interpersonal skills; (7) professionalism; and (8) management/organization. For each competency, specific skills were identified. An edited version of the competencies and skills served as the basis of a Delphi Questionnaire, which was mailed to 20 nationally recognized experts in the field, asking for a critical response to verify and/or supplement the list of competencies and skills. There was general agreement among the 12 respondents concerning the designation of most of the skills as "essential," "desirable," or "useful," and majority agreement about the rank order of the generic competencies. Based on panel recommendations and questionnaire responses, a list of "teachable" skills and competencies were developed, representing the elements that must be included in a training design for ABE instructors.

O'Connor, Terence, "How to set up, run and evaluate a training program based on behavior modeling principles," Training, v.16, n.1, Jan. 1979: 64- (4p).
A course based on the concept of learning by imitating the behavior of models. Participants' performances are video taped. 35 months later graduates of the course are again video taped while doing a role play exercise, and the two video tapes are compared.

ED261147
Oen, Urban T, Identify the characteristics of a competency-based vocational education (CBVE) program, Addison, Ill. Self-instructional competency-based professional teacher training manual, Competency-Based Individualized Vocational Education Consortium, 1985: 54p.
This publication is part of a series of self-instructional teacher training manuals designed to assist vocational-technical educators or

industrial trainers to develop and implement competency-based vocational education (CBVE) programs. The purpose stated for this manual is for the instructor to learn to identify the characteristics of a competency-based vocational education program. Each manual contains the following sections: cover page that contains the task title, purpose, and information block (program and task codes, estimated time, prerequisites); terminal performance and micro-performance objectives; procedures for completing this manual; learning activities with required resources cited; information sheets; activity sheets (self-checks) with answer keys; a written examination with answer key; and a product/performance checklist.

ED261145

Oen, Urban T, Write measurable performance objectives, Addison, Ill. Self-instructional competency-based professional teacher training manual, Competency-Based Individualized Vocational Education Consortium, 1985: 65p.

This publication is part of a series of self-instructional teacher training manuals designed to assist vocational-technical educators or industrial trainers to develop and implement competency-based vocational education (CBVE) programs. The purpose stated for this manual is for the instructor to learn to develop measurable performance objectives. Each manual contains the following sections: cover page that contains the task title, purpose, and information block (program and task codes, estimated time prerequisites); terminal performance and micro-performance objectives; procedures for completing this manual; learning activities with required resources cited; information sheets; activity sheets (self-checks) with answer keys; a written examination with answer key; and a product/performance checklist.

ED260234

Office of Vocational Education, Job keeping skills, Columbia, South Carolina State Department of Education, May 1985: 465p.

This curriculum is designed to help teachers teach a course in job keeping skills to high school students in order to instill in them appropriate attitudes for the world of work. The guide introduces the human aspects of working in an organization. "Job Keeping Skills" is divided into 10 instructional units. Each unit contains four or more lessons that can each be completed in approximately 50 minutes of class time. Each lesson consists of these components: unit title, lesson tile, educational concept, objectives, resources needed, learning activities, evaluation, other suggested resources, and follow-up activities. Topics of the units are the following: understanding free enterprise, motivation, work attitudes and habits, appearance, learning the job, safety, communication, take-home pay, terminating the job, and job advancement. A seven-page bibliography of printed and audiovisual resources is included.

Olivas, Louis, "Designing and conducting a training needs analysis: putting the horse before the cart," Journal of Management Development, v.2, n.3, 1983: 19-41.

Data needs to be collected to (1) Define the need, (2) Identify the Solution, (3) Specify those needing training, and (4) Provide the planning details for delivery of training. Criteria for selecting the

methodology are given. The data is analyzed, verified and then processed to set priorities. Needs assessment is not a simple process, it requires data from many different sources, gathered in many different ways. Trade-offs must be made between the time and resources available, and the scope and depth of the needs analysis. It is because of the numerous decisions that must be made regarding trade-offs that the model for needs assessment repeatedly emphasises the importance of examining underlying assumptions.

Ontario Society for Training and Development, Competency analysis for trainers: a personal planning guide, Ontario: Ontario Society for Training and Development Professional Development Committee, 1982. 40p.
An operational model of competencies and skills identified by qualified training and development practitioners. Defines four training and development functions; instructor, designer, manager and consultant, and three proficiency level indicators, high, medium and low, to show levels of skill or knowledge required. Being a self-development appraisal process the user chooses a competency area, e.g. administration, training needs analysis, and turns to the appropriate table.

ED091552
Oriel, Arthur E, Improving performance in technical and apprentice training. A pilot study of performance-based apprentice training, Chicago: Development Systems Corporation, 1974. 235p.
Trial of the Performance Based Apprentice Training (PBAT) experimental program in the metal trades where performance was the main criterion of success. After one year of an average 61 hours of instruction, candidates scored 30% higher in a final exam than those who had had an average of 187 hours of training. Demonstration that the quality, intensity, effectiveness and sequencing of training is more important than the number of hours offered.

ED133462
Oriel, Arthur E, Joint workshops: Performance-based apprentice and technical training: Final report, Chicago: Oriel (A.E.) and Associates Ltd., 1976. 127p.
A series of workshops held to give information about Performance Based Training (PBT), to industrial/college and apprenticeship/training personnel. Of the two groups, 90% and 61% respectively recommended the scheme after the workshops because of more efficient work done by trainees under the scheme.

ED270578
Orr, William T, Jr, "Advisory Committee evaluation of vocational education programs," Sanibel, Florida Educational Research and Development Council Research Bulletin, v.19, n.1, Summer 1985: 49p. obtainable in ERIC document form.
Program advisory committees in vocational education have traditionally been charged with the responsibility of evaluating programs for the purpose of keeping them up to date with business and industry practices and current technology. Rapid technological development and

accountability requirements have led to state mandates that the advisory committee evaluation be given closer attention. Through an evaluation of the literature and practice, it was learned that there is a lack of systematic methodologies for advisory committees to use in evaluating programs. The Program Advisory Committee Evaluation System (PACES) was developed to fill this gap. The PACES model was developed through a systems approach to the problem. The model was conceptualized through analysis and synthesis of existing information about vocational education, program advisory committees, program evaluation, and systems design. The model was validated through critical examination by recognized experts and practitioners and through tests of operational feasibility conducted in schools. The model consists of four major functions or subsystems: advisory committee training, data gathering, data organization, and analysis and communication of findings. The system is designed to enable advisory committees to evaluate programs on factors found to be within the realm of expertise of advisory committee members, excluding factors that belong to the realm of school, district, and state administrators. When properly implemented, the PACES system should provide vocational education program operators with information related to the needs of the businesses and industries who employ program completers, so that they can make program decisions from an informed base. A six-page reference list is appended.

Paper and Paper Products Industry Training Board, Assessing training needs and developing a training plan, Potters Bar, Hertfordshire: Paper and Paper Products Industry Training Board, 1979. 17p.

Paterson, T T, Job evaluation, Vol. 1: a new method, London: Business Books, 1972: 209p.
Surveys seven methods of job evaluation. Describes a new method - work analysis, which has application in training and selection of staff.

Paterson, T T, Job evaluation, Vol. 2: a manual for the Paterson method, London: Business Books, 1972. 208p.
A practical manual showing how to put the Paterson method (or work analysis method) into practice. This method, and seven others, are described in Vol. 1. Gives a number of sample task analysis forms for jobs such as wheel tester, lathe operator and diamond driller.

Patrick, J and A K Moore, "Development and reliability of a job analysis technique," Journal of Occupational Psychology, v.58, 1985:149-158.
Examines reliability in the development of a modified British version of the Position Analysis Questionnaire, (PAQ), known as the Job Structure Profile (JSP).

Patrick, J, P Spurgeon and A Shepherd, A guide to task analysis: applications of hierarchical methods, Birmingham, Occupational Services.
Shows how two linked techniques Hierarchical Task Analysis (HTA) and Overview Task Analysis (OTA) may be used not only for training but also in a range of additional applications. Provides practitioners with guidelines on how to carry out task analysis. The term HTA refers to a task analysis in which a job or area of work is broken down into a

hierarchical set of tasks, sub-tasks and plans. Sub-tasks are exhaustively specified and each task is described in terms of its objective. The analysis proceeds on more than one level of analysis. OTA is a modified version of HTA. The strength of HTA is in defining what needs to be trained given a specific set of trainees. OTA is a more general technique providing a descriptive set of tasks across an area of work. One essential difference between HTA and OTA is in terms of the stopping rule governing the level of description achieved by each technique.

Patrick, Peggy Winchell, Training effectiveness evaluation, presented at the National Conference on Achieving Professional Excellence, 1985, Little Rock, Arkansas, 28p.
The concept of training effectiveness evaluation should not be confused with training evaluation per se. It is a more comprehensive term which encompasses training evaluation. Training effectiveness evaluation addresses the following questions: 1. Does the training achieve the purpose for which it was planned? 2. Does the training improve job performance? 3. Are performance objectives stated and tested? 4. Is the instructional process effective? 5. Are individual needs considered in training? This paper explains what the concept is, why it is used, and how to conduct training effectiveness evaluation. Paper copies of transparencies used with the original presentation are appended.

Pearlman, K et al, "Validity generalisation results for tests used to predict job proficiency and training success in clerical occupations," Journal of Applied Psychology, v.65, n.4, 1980: 373-406.

Pekich, John, "Try this simple 'systems approach' to determining training needs and methods," Training, v.14, Sept. 1977: 47.

People and work: trainability testing, London, Manpower Services Commission, Training Services Division, 1979: 26p. (People and Work practical guide series).
Trainability tests involve asking an applicant to perform a specific job-related test in which he or she has been given prior instruction. The booklet describes how to design a trainability test, how to apply it, and how to validate the results using statistics. Examples of tests are given.

Performance Assessment, edited by Ronald A Berk, Joh Baltimore + London, Johns Hopkins University Press, 1986: 544p.

Performance testing: issues facing vocational education, edited by Janet E Spirer, Columbus, Ohio, National Center for Research in Vocational Education, (c.198?) 193p.
This handbook deals with issues related to evaluation of publically funded training programmes. It consists of commissioned papers and reactions to papers on the four types of issue that must be considered

before a performance test can be constructed. These issues include: philosophical issues, technical issues, legal issues and implementation issues. Two papers discuss the implications for vocational education of the contents of all the papers. Performance testing is emphasized as an evaluation tool. A multidisciplinary approach is taken.

Phillips, Jack J, Handbook of training evaluation and measurement methods, Houston, Gulf Publishing, 1983: 316p.
This handbook equips human resource development (HRD) professionals with the tools necessary to evaluate their programs. Presented from a practical viewpoint, it is based on actual experiences, and each technique or idea has been tested and proven. The many examples are taken from a variety of settings. In Part I the importance of measurement is explained. Part II describes preparation for evaluation; Part III describes evaluation methods and mechanics; and Part IV explains the factors that affect program results. How to determine the costs of HRD programs is also covered.

Posavac, Emil J and Raymond G Carey, Program evaluation: methods and case studies, 2nd edition, Englewood Cliffs, N.J., Prentice-Hall: 1985.

ED192167
Pottinger, Paul S et al, The assessment of occupational competence: 3. Competence assessment for occupational certification, Boston: McBer and Co., 1980. 170p.
One of seven sections of a report examining occupational competence, this chapter looks at the issue of certification of services performed by the person with the credential. Competence assessment is currently a component of certification, so how an occupation becomes a profession is looked at. The definition and measurement of competence is discussed.

Poulet, Roger, "Training process effectiveness," Industrial and Commercial Training, v.18, n.1, Jan/Feb 1986: 10-13.
Examples given are in management training, but the points made are relevant to other types of training as well. The three main elements of effectiveness are (1) accurate identification of training needs, (2) accurate selection of participants, and (3) appropriate course content.

Poulter, Bruce, Training and development, Sydney: CCH Australia, 1982. 166p.
Has a comprehensive section on training needs analysis and training objectives, giving types of training needs, types of needs analysis and how to carry out needs assessment. A sample training needs survey is included. Preparing and setting training and behavioural objectives is discussed and set out in chart form.

Powel, Ray, The Instructional Systems Model for vocational education: a manual, Singapore, Colombo Plan Staff College for Technician Education, 1983: 87p.
This manual was written to be used in conjunction with training seminars for the vocational educator in Sri Lanka. It is designed to demonstrate the basic steps that facilitate learning. It describes the

steps that must be carried out if one is to become as expert in the skill of course development, as many teachers are in the practice of their own vocational speciality. The procedure is not specific to a subject matter, but applies to many academic, as well as vocational and technical areas.

ED208176
Prien, Erich P, Symposium comments and a perspective on job analysis, Paper presented at the Annual Meeting of the American Psychological Association, (Los Angeles, CA), 1981. 14p.
Perspective on job analysis and related comments on research at a symposium. Discusses two questions, what should be done? and how well was it done? - the Stage I and II evaluation operations.

Prien, Erich P, Irwin L Goldstein, and William H Macey, "Multidomain Job Analysis: Procedures and Applications," Training and Development Journal, (USA), August 1987, 68-72.
Job analysis can seem difficult because it is such a broad effort. The key to success lies in cutting it down to size, and a multidomain approach helps you do just that. Use five steps. First identify the target job or job family by researching job descriptions, work products, job forms and the like; interview supervisors, and watch incumbents perform the job. 2nd develop task statements, 3rd develop skill statements. Once you have gathered all appropriate task and skill statements, review, evaluate and consolidate the two inventories. Finally, select a job analysis operation.

Province of British Columbia Ministry of Education, DACUM.1. Introduction to DACUM, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 12p.
The first in a series of four books on the DACUM process. Looks at principles and procedures, DACUM's history and present standing, and gives a list of certain industries already covered by the process.

Province of British Columbia Ministry of Education, DACUM.2. The DACUM Workshop, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 10p.
The second in a series of four books on the DACUM process. Explains what a DACUM workshop is, the reasons for having one and who participates. Defines the roles of participants, where workshops are held, what the agenda consists of and the next step to take when the workshop is completed.

Province of British Columbia Ministry of Education, DACUM.3. From skill profile to objectives, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 6p.
The third in a series of four books on the DACUM process. Looks at analysing the skill profile and setting objectives and adds a note on terminology regarding the word "objectives" to avoid confusion over learning, performance, terminal, instructional, enabling and behavioural objectives.

Province of British Columbia Ministry of Education, DACUM.4. From objectives to instruction, Richmond, British Columbia: Province of British Columbia Ministry of Education. Post-Secondary Department, 1983. 14p.
The fourth of a series of four books on the DACUM process. Looks at analysing the objectives, selecting instructional techniques, choosing instructional resources, evaluation, how to instruct adults and provincial resources (in British Columbia).

Pryor, Roger, "A fresh approach to performance appraisal," Personnel Management, June 1985: 37-39.
It is not the design of performance appraisal forms, or even the system used, that governs the success or failure of the exercise. What matters is the attitude adopted by managers.

Pyle, Bob, "Evaluating white-collar technical training requirements," Training and Development Journal, (USA), v.39, n.8, August 1985: 56-58.
Even trainers with technical backgrounds can expect problems if they apply textbook approaches to analyzing white-collar technical training needs.

Quinn, Susan and Shelley Karp, "Developing an objective evaluation tool," Training and Development Journal, (USA), v.40, n.5, May 1986: 90-92.
Two training program developers show you how they measure program effectiveness. They discuss what to measure and how, how to formulate questions, how to assess questionnaire validity and response validity, and which methods should be used to analyze the data.

Rabey, Gordon P, Supervisor, Wellington, N.Z.: Paige productions, 1985.
A guide for new supervisors covering such areas as objectives, work planning, decision making, team development, skill training, staff appraisal and communication skills.

Rabey, Gordon P, Training: a practical approach to job training, Wellington, NZ: Paige Productions, 1980.
Defines the function of training, describes its operations from training needs analysis through costs and budgets, how people learn, evaluation of training, to retraining of personnel and the training of training officers.

Rae, Leslie, How to measure training effectiveness, Aldershot, Hants, Gower 1986: x, 151p.
This book sets out to suggest ways in which any form of training can be assessed for effectiveness and value. It covers the whole training process from the selection and planning of a training event through to the validation and testing of its outcome in both the short and the long term. The author summarizes the various approaches and provides practical instruments based on his own experience.

Rae, Leslie W, "How valid is validation?", Industrial and Commercial Training, Jan/Feb 1985:15-20.
Discuss definitions of both validation and evaluation, and the difference between them. Discusses problems with pre-testing and post-testing, and suggests a 3-Test approach. Participants are not only pre-tested and post-tested, but also asked to assess their skills as they were at the start of the training, but knowing what they now know about themselves and their skills at the end of training.

RAF School of Education. Resources Development Unit, A guide to the design of learning packages, RAF School of Education. Resources Development Unit, (?) 57p.
This guide has been produced to assist education officers who may be called upon to design learning packages. It is assumed that these education officers will be subject-matter experts and experienced in the teaching of the subject. Having studied the guide you will be able to: 1. define a learning objective, 2. write learning objectives, 3. identify objectives relevant to your target population, 4. arrange the objectives in a logical learning sequence, 5. list the types of tests which may be used, 6. construct appropriate tests, 7. define a learning resource, 8. list the types of learning resources available, 9. list the problems which may be encountered in the production of learning resources, 10. select appropriate learning resources for specific objectives, 11. define a learning package, 12. state the weaknesses of an unvalidated package, 13. list the methods of validation.

Randall, Lyman K, "Evaluation: a training dilemma," Training Directors Journal, May 1960: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 186-190.
Do you evaluate to refine?... or to survive?

Rath, Gustave and Karen Stoyanoff, "The Delphi Technique," in:
Ulschak, F L, Human Resource Development: the theory and practice of needs assessment, Reston, Va. Reston Publishing, 1983: 111-131.

Rawling, K, "Selection tests: battery of six tests for engineers," Personnel Management, v.16, n.12, 1984:51.
Description of scope and potential uses of the Engineering Selection Test Battery, (ESTB), of six tests, which takes two and three quarter hours to administer and fifteen minutes to score. Score profiles can be used to test suitability for an engineering or technical career, and indicate suitability for broad groups of subjects.

Reeves, Elton T and Michael J Jensen, "Effectiveness of program evaluation," Training and Development Journal, (USA), Jan 1972: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 42-46.

Reilly, Robert R and Lewis Koenigsberg, "Occupational competency exams: a model for assessing reliability and validity," American Vocational Journal, v.46, n.5, May 1971:47-49.
Reports the results of a research and development study to determine the reliability and validity of the written and performance occupational competency tests used in New York State.

Ribler, Ronald I, Training Development Guide, Reston, Virginia, Reston Publishing, 1983: 215p.
After a short chapter on learning theories, this book is divided into chapters about the ten different tasks that need to be done when designing training. These include (1) needs analysis to identify training development requirements; (2) developing course objectives; (3) developing enabling objectives; (4) developing course criterion test items; (5) developing demonstration, practice and test items; (6) defining strategy; (7) preparing instructor's and trainees' materials; (8) developing instructor's or administrator's guide; (9) trying out the training package and (10) analyzing the results and revising. After this, the following subjects are covered: workshops and conferences; administration guide for self-instructional training; lesson plans; other training materials; computers in training; estimating costs; training trainers; evaluation of training; alternatives to training, and writing styles. Alternatives include analyzing causes for performance deficiencies, improving system design, training to treat symptoms, personnel selection and examining the validity of objectives.

Richards, R C, "How to design an objective performance-evaluation system," Training, v.21, n.3, March 1984: 35- (4p).

Robinson, Kenneth R, A handbook of training management, 2nd edition, London, Kogan Page, 1985: 266p.
This book covers training objectives; training needs analysis; planning the overall programme; aspects of the training process including learning and behaviour as well as the methods and techniques of training. Also covered are the evaluation and validation techniques; training resources; and influences on the training function. Some areas of recent development in training are mentioned.

Rogers, Sandra K and Maurine F Dahlberg, Complete Statistical Survey results of 1982 Texas Competency Validation Project, Killeen, Texas: Central Texas College, 1982.
Also available as Eric Document (see below).

ED234202
Rogers, Sandra K and Maurine F Dahlberg. Complete statistical survey results of 1982 Texas competency validation project, Killeen, Texas:Central Texas College, 1982. 129p.
Report on a project aimed at developing current statewide (Texas), validated competencies for auto and diesel mechanics, welding, office occupations and printing. The four steps in competency validation are described, competency lists and performance objectives developed by the

project team are discussed, and this result information given - survey procedures, data analysis and reduction, major results and conclusions, additional results, specific products produced, regional trends and a summary of results.

ED218500

Rogers, Sandra K and Maurine F Dahlberg, 1982 Texas competency validation project for automechanics, diesel mechanics, office occupations, printshop trades and welding. Final Report, Killeen, Texas:Central Texas College, 1982. 48p.
A statewide, (Texas), competency validation project to provide current information about job skills for the above jobs. Includes lists of validated job skills designated as "important to know," performance objectives and assessments for testing student mastery, and a users' manual describing competency validation.

Rogoff, R L, "The training wheel: a simple model for instructional design," Training, v.21, n.4, 1984: 63-64.

Rogoff, Rosalind L, The Training Wheel: a simple model for instructional design, New York, John Wiley and Sons, 1987: 151p.
The book that grew out of the idea expressed in the 1984 article. This book proposes a middle ground where instructural designers (who want to fit everything into an ISD model) and subject matter experts (who want to do a knowledge dump for every class) can meet and reconcile their different approaches to training. The result - a clear-cut four phase instructional design model that includes gathering data, analyzing data, developing solutions and taking action.

Romiszowski, Alexander Joseph, Designing instructional systems, London: Kogan Page, 1981.
Decision making in course planning and curriculum design.

Rose, Homer C, "A plan for training evaluation," Training and Development Journal, (USA), May 1968: reprinted in:
Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 253-257.
Describes the elements involved in the evaluation of the way the course was planned, the evaluation of the administration and the evaluation of the training.

Rosenberg, Marc J, "The ABCs of ISD, (Instructional Systems Design)," Training and Development Journal, (USA), v.36, n.9, Sept. 1982: 44-50.
The Instructional Systems Design (ISD) model presupposes that a front end analysis of the problem has been done to determine what solution is best, and that training has been chosen as the solution. ISD has five major phases: analysis, design, development and implementation are sequential phases. The fifth phase, evaluation, is ongoing throughout the other phases. Analysis is a needs assessment phase. It looks at

organisation needs, learner needs, and job needs (i.e. performance requirements). The design phase has a distinct framework which outputs specifications for the development phase. The development phase outputs student materials, instructor materials, other equipment and tests. Evaluation is taking place of the quality of the data going into, and the output coming from, each phase. The implementation phase allows evaluation to take place under actual training conditions. The ISD model is more than a sequence of events, it depicts a relationship between events.

Rosenberg, Marc J and William Smitley, "Constructing tests that work," Training, v.20, n.9, Sept. 1983: 41- (4p).

Rossi, Peter H and Howard E Freeman, Evaluation: a systematic approach, 3rd edition, Beverly Hills, Sage, 1985:

Rothwell, William J, "How to conduct a real performance audit," Training, v.21, n.6, June 1984: 45, 47-49.

Rummler, Geary A, "Determining needs," in: Training and development handbook: a guide to Human Resource Development, 3rd edition, edited by Robert L Craig, New York, McGraw-Hill, 1987: 217-247.

Rummler, Geary, "How to determine what problems can - and can't - be resolved by training," Training, v.13, n.8, Aug 1976: 18-21.
Use performance analysis to determine what problems can - and can't - be resolved by training. Determine: 1. precisely what the problem is, 2. the priority of solving the problem, and 3. the probable causes of the problem. This article contains a copy of the forms used for a 'Request For Development of Training,' which is a questionnaire intended to be used to guide managers through an objective analysis of the problem. It also contains a section in which to examine the ratio of projected value to projected cost of the proposed training.

Rummler, Geary A, "You need performance, not just training," Training, v.14, Oct 1977: 50-53.
Training should be measured by improved performance, not training hours. You need 'performance analysis'. Performance is a function of the individual and the job environment, any modification has to deal with both parts. The 'performance system' has 5 parts only one of which is the performer. Training by itself is almost never an appropriate solution; the cause of performance problems is almost always a combination of 'faulty' components in the performance system. There is a need to analyze all causes and put together comprehensive solution strategies. This solution goes beyond training and can be called 'performance engineering.'

R Z, "The Pareto Principle: why things aren't fair," Training, v.23, n.7, July 1986: 59-60.
Stated in English - as opposed to maths, Italian or French - Pareto's Law says that in any series of elements or variables, a small fraction of the elements count for most of the effect (the 80/20 rule). The trouble comes in figuring out which 20% gives you the 80%. Pareto diagrams can help. They can be simple bar charts. The article is not directly about solving performance problems, but could be a relevant tool.

Salinger, Ruth D, "Why training fails," Training, Feb 1975: 28- (6p).

Salinger, Ruth D and Basil S Deming, "Practical strategies for evaluating training," Training and Development Journal, (USA), v.36, n.8, 1982:20-28.
Discussion of six evaluation strategies. Focus more on executive development programs.

ED224884
San Mateo Office of Education. Entry standards assessments, Redwood City, California. San Mateo Office of Education, 1982: 140p.
Skill checks containing materials to help students and counsellors determine whether students have the maths, reading and writing abilities needed to take part in various vocational education courses for jobs such as clerical worker, landscape gardener, data entry operator and hospital service worker. Assessment exercises include completing forms, making calculations and reading meters.

Savage, Adrian, "Using past behaviour to predict performance," Personnel Management, August 1985: 51.
A look at scored biographical data or 'Biodata' as it is more commonly known, as part of the selection process, particularly where the number of job applicants is high.

Saville and Holdsworth Ltd, "Occupational Personality Questionnaires," Training Officer, v.21, n.5, May 1985: 140-142.
Saville and Holdworth Ltd are at the forefront of occupational test development in the UK. They develop and publish a wide range of occupational tests. The company has thirteen full-time psychologists running projects in industry ranging from job analysis and assessment centre implementation, to interview training and training in the use of aptitude tests and personality questionnaires. This article discusses the 1984 developed Occupational Personality Questionnaires (OPQ). Discussing their field of application and validity.

ED254565
Schlenker, Richard M, A curriculum development oriented partial task analysis bibliography, 1985. 120p.
Defines task analysis as the process of identifying all things that individuals must accomplish to satisfactorily complete an activity or

course of instruction. Lists task analysis documents related to curriculum or training program development taken from five sources. (All training needs analysis is not the focus of this bibliography, it follows on from the process of task analysis).

ED211713

Schultz, Russel E and Harold Wagner, Development of job aids for instructional systems development, Alexandria, Va., Human Resources Research Organisation, 1981. 63p.
Development of Job Aids, ("how to do it" guidance tools and procedures) used by laypeople using the Instructional Systems Design (ISD) model. Job Aid was found to eliminate problems associated with the five phases of ISD, (analysis, design, development, implementation and control). Job Aids was recommended for use throughout the entire ISD process.

Scott, Dow and Diana Deadrick, "The nominal group technique: applications for training needs assessment," Training and Development Journal, (USA), v.36, n.6, 1982:78-83.

Scott, Ted, "Supervisor's evaluation of staff development activities," Training and Development Journal, (USA), Sept. 1971: reprinted in: Evaluating training programs: A collection of articles from the Journal of the American Society for Training and Development, compiled by Donald L Kirkpatrick, Madison, Wisconsin, ASTD, 1975: 283-285.
A basis for measuring improvement in employee performance.

ED277444

Seitz, Fred, CBE: the right angle for learning, Beaufort Technical College, SC. Center for Staff and Curriculum Development, Aug 1986: 42p.
Designed for instructors at Beaufort Technical College (BTC) in South Carolina, this handbook provides a brief guide to competency-based education (CBE) and to the available resources at the college for assistance. Section 1 offers introductory comments on the concept of quality control and the five basic components of educational quality control. Section 2 defines CBE, identifying its seven essential elements as the definition and verification of program competencies; the assignment of program competencies to courses; the provision of course syllabi containing specific competency statements to students; the statement and design of learning objectives and activities to teach each competency; the construction and administration of criterion-referenced teacher-made tests to determine student knowledge; the provision of remediation and/or acceleration/enrichment; and the assessment of program content and method of delivery. Section 3 focuses on the need for CBE and the differences between the traditional and competency-based education approaches. Section 4 explains how an instructor plans for and implements CBE, offering guidance on assessment, curriculum design, instruction, course and student evaluation and subsequent revisions. Section 5 lists and describes available campus resources. Appendices provide information on institutionally-defined competencies for degree graduates, program outcomes statements for 10 occupational programs, a glossary, a verb list for use in instructional objectives, checklists for performance objectives and criterion-referenced test items, tips for CBE instruction, a sample DACUM chart sample, and syllabus format.

Shears, Arthur E, "Occupational analysis and training," Journal of European Industrial Training, v.9, n.1, 1985: 23-27.
Traces the growth of the DACUM process from occupational analysis, its relevence, where it has been used in Canada, and guidelines on conducting a DACUM workshop.

Shepherd, A, "An improved tabular format for task analysis," Journal of Occupational Psychology, v.49, 1976: 93-104.
One reason for Annett et al's technique of hierarchical task analysis not being more widely adopted is that would-be analysts have failed to understand the concept of 'redescription'. It is argued that the original tabular format proposed for recording such analyses has not facilitated this understanding. For example, the table does not enable easy examination of the redescription of a superordinate operation, nor is there a clear separation between the basic task analysis and hypotheses proposed to ensure operator competence. A revised format is proposed to overcome these objections and is illustrated using a complex planning task.

Shrinkfield, Anthony J, "Designing evaluations of educational and social progress by Lee J Cronbach: a synopsis," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 357-379.

ED234095
Siegel, A I, Trainability testing for Navy selection and classification, Wayne, Pennsylvania: Applied Psychological Services Inc. 1983. 49p.
Third report on the use of a technical classification assessment center, (TCAC) for evaluating general detail (GENDET), personnel in the Navy. It presents further development and test modification covered in the first two reports and validates their usefulness for assigning GENDETS as seamen, firemen and airmen.

Singer, E J and J Ramsden, Practical approach to skills analysis, London: McGraw-Hill, 1969.

ED106479
Sinnett, William E, The application of DACUM in retraining and post-secondary curriculum development, (2nd ed.) Toronto, Ontario:Humber College of Applied Arts and Technology. RANDA Division, 1974. 245p.
Expansion and clarification of DACUM. Definition as process and product. Explanation of six sections of DACUM document.

ED198266
Skinner, Gilbert H, Training needs assessment for criminal justice agencies, Michigan State University, 1980. 36p.
Summary of current thinking on training needs analysis for criminal justice. Covers purpose of needs assessment, performance, alternatives to training, needs determination methods, concepts of needs analysis, data analysis and cost/benefit analysis.

Smith, B J and B L Delahaye, How to be an effective trainer, New York, John Wiley & Sons, 1983: 306p.

Smith, Barry, Brian Delahaye and Peter Gates, "Some observations on TNA," Training and Development Journal, (USA), August 1986: 63-68.
Training Needs Analysis (TNA) is often not done or not done effectively. This article proposes a model to assist analysis called the TNA model. It includes (1) surveillance, (2) investigation and (3) analysis, and the data to be collected includes organisation data, operations data and person data.

ED255636
Smith, Ester Gottlieb and Nancy Holt, State-of-the-art review of vocational education evaluation: state evaluation procedures and practices, Belmont, Massachusetts:CRC Education and Human Development Inc. 1979. 54p.
Report of current state practices and procedures in light of the 1976 Vocational Education Act Amendments. The survey found that many problems regarding evaluation existed, such as insufficient funds to conduct or monitor evaluations, insufficient trained staff to design and use evaluation procedures, lack of access to information processing facilities, lack of clarity about the intent of the law, and inaccuracy of reporting, leading to incorrect assessment about evaluation.

Smith, Judson, "Selecting and nuturing only your best," Training, v.15, n.9, Sept. 1978: p.21- (3p).

Smith, Martin E, "Evaluating training operations and programs," Training and Development Journal, (USA), v.34, n.10, 1980:70-78.
Presents a systems model and a planning guide for evaluation. Model formulated by Brethoneer and Rummler, (1976).

Smith, Mike and Dave George, "Assessment centres: a test and taste for job applicants," Management, July 1986: 26-27.
Few "Management" articles have created as much feedback as the attack on personality tests by Massey University psychologists Mike Smith and Dave George (see below). In this article they look at what they consider to be a better selection method than either personality tests or interviews - assessment centres. These see candidates doing work samples over a period of two or three days and candidates and employers meeting to discuss the job.

Smith, Mike and Dave George, "Stupid personality tests: who's conning who?", Management, March 1986: 50.
Personality tests are widely used in managerial selection in New Zealand. But are they an accurate measure of how a candidate will perform on the job? Such tests are critically evaluated. The authors believe it is stupid to use personality tests for selection purposes.

Solomon, Gerald and Ara Bouloutian, "Building a performance system - not a training system," Training, v.36, n.9, September 982: 32-34.
The goal of a performance engineer is to build systems to attain levels of desired performance - a performance system, or method of attaining predicted levels of performance based on a positive return on investment. To do this six factors can cause the desired change. One is training. The six factors are set out in the "Six-Cell Performance Engineering Model" (a transparency of the model is included).

Spears, Jerry O and Allen D Calvin, "The usefulness of informing students of training objectives," Performance and Instruction, v.21, n.5, Jun. 1982:34-36.
Gives the outcomes of a study of the impact on learning in industrial training programs that results from presenting adult students with a set of educational objectives prior to their enrollment in a course. Research procedures, the population studied, methods of measurement, data collection, and the results of the study are discussed.

Spitzer, Dean, "Remember these dos and don'ts of questionnaire design," Training, v.16, n.5, May 1979: 34- (4p).

Spitzer, Dean R, "Try Fault Tree Analysis, a step-by-step way to improve organization development," Training, v.17, n.2, 1980: 58, 64, 68-69.

Steadham, S V, "Learning to select a needs assessment strategy," Training and Development Journal, (USA), v.34, n.1, 1980: 56-61.

Stein, David S, "Designing performance-oriented training programs," Training and Development Journal, (USA), 1981 12-16.

Steinmetz, Andres, "The discrepancy evaluation model," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 79-99.

Stewart, William J, "Determining first-line supervisory training needs," Training and Development Journal, (USA), v.24, n.4, 1970: 12-19.
Report of a study which surveyed the principal job tasks of a first-line supervisor. The participants were 717 supervisors representing 110 industrial organisations in Ohio.

Sticht, Thomas G and Larry Mikulecky, Job-related basic skills: cases and conclusions, Columbus, Ohio: The National Center for Research in Vocational Education, Ohio State University, 1984. 39p.
The final section, "Guidelines and methods for developing occupationally related basic skills programs," contains information on program development approach. This method uses the five areas of analysis, design, development, implementation and evaluation.

Stolovitch, Harold D, "Performance technology: an introduction," Performance and Instruction, v.21, n.3, Apr. 1982:16-19.
Introduces performance technology as a field of application for training professionals. The term "performance technology" is defined and explained, the epistemological foundations of performance technology are outlined, the relevance of performance technology to training and human development is described, and myths about performance technology are discussed.

Stufflebeam, Daniel L and George F Madaus, "The standards for evaluation of educational programs, projects, and materials: A description and summary," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 394-404.

Stufflebeam, Daniel L, and William J Webster, "An analysis of alternative approaches to evaluation," in:
Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 23-43.

Sullivan, Howard and Norman Higgins, Teaching for competence, New York, Teachers College Press, Columbia University, 1983: 104p.

ED248879
Sullivan, R F, Toward an integrative open-systems model of instructional development in education and non-educational organisations, Buffalo, New York:State University of New York, 1982. 374p.
Survey on the open systems model of instructional development, (ID), proposed for educational and non-educational organisations. Focus on 26 behaviors practised in the development of instruction. Survey revealed that while there are isolated differences between education and business respondents, both sub-groups follow the same basic ID process.

ED121969
Swanson, R A and S A Sawzin, Industrial training research project, Denver, Colorado:Johns-Manville Corporation, 1975. 184p.
An experimental comparison of structured and unstructured training of semi-skilled production workers using representative trainees, two training programs, and evaluation of product quality, worker competence, cost effectiveness etc. Results showed that structured training took less time, produced a higher level of competence, lower production losses and a higher percentage of production problem solving.

Swezey, Robert W, Individual performance assessment: an approach to criterion-referenced test development. Reston, Virginia: Reston, 1981. 177p.
Looks at criterion-referenced measurement as a performance assessment method. The difference between criterion-referenced and norm-referenced measurement is stressed: the former evaluates mastering of

a given skill or knowledge or set of objectives while the latter merely evaluates performance relative to that of comparable individuals.

Swierczek, Frederic William and Lynne Carmichael, "The quantity and quality of evaluating training," Training and Development Journal, (USA), v.39, n.1, Jan. 1985: 95-98.
Report on a case-study of training, with a six month follow up.

Systems approach to instructional design, edited by Thomas T Liao and David C Miller, Technology of Learning Systems Series, vol. 1, Farmingdale, New York, Baywood, 1978.

Taggart, Robert, A fisherman's guide: an assessment of training and remediation strategies, W E Uphohn Institute for Employment Research, 1981.

Technical education and the world of work, edited by R A Pedder and R E Taylor, Wellington, N.Z., Employers Federation, c.1985. 32p.
A discussion paper by the New Zealand Employers Federation on the role and functions of the Technical Institutes, the Examining Authorities and Industry in the vocational education process. Includes brief comments on employer philosophy, the role of technical institutes and community colleges, the role and expectations of industry, training needs analysis, vocational education standards, qualifications, role and functions of examining authorities.

Technology transfer: A project guide for international HRD, edited by Agnes Reynolds, Boston, International Human Resources Development Corporation, 1984: 145p.
Defines Human Resources Development (HRD). Contains a section on program design for trainees from third world countries. Gives information on planning, needs assessment, setting objectives, design, implementation and evaluation. Computer based learning is also included. A section on training supervisors uses Leonard Nadler's Critical Events Model to construct a program. (See also Nadler, 1982).

"The great training robbery," Education and Training, v.27, n.6, June 1985, 161-162.
Brief notes on the necessity for front-end analysis (or needs analysis) which distinguish between "can't do" problems and "won't do" problems. Brief description of a case study in which there was quality improvement in engineers' reports.

The job analysis handbook for business, industry, and government, edited by Sidney Gael, New York, Wiley, 1987.

The National Center for Research in Vocational Education, Preparing for high technology. Thirty steps to implementation, Columbus, Ohio: The National Center for Research in Vocational Education, 1983. 49p.
One of three documents that address the concerns of postsecondary planners related to technician training needs in high-technology areas.

Gives guidelines on long-range planning, how to set up an advisory council, the "do's and dont's" of development, implementation, evaluation and refinement and a checklist of thirty necessary steps in programme design. A useful section on DACUM forms Appendix B.

The performance appraisal sourcebook, edited by Lloyd S Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1982: 190p.
Begins by defining performance appraisal then defines performance and how to develop performance criteria. The third section covers job analysis, types of performance measures, and choosing the right method. This is followed by how to carry out performance appraisal, how to train the raters giving performance feedback, and using appraisal for human resource management. There are numerous examples of tests and methods such as behaviorally anchored rating scales (BARS) managing by objectives (MBO) relative rating systems and graphic rating scales.

The training and development sourcebook, edited by Lloyd Baird et al, Amherst, Massachusetts, Human Resource Development Press, 1983: 381p.
A handbook which deals with designing, implementing and evaluating training and development, to improve individual and organisational performance. Includes readings, checklists, questionnaires, models, and methods for analysis that have proved useful in consulting and teaching. Contains a thorough section on training needs analysis and outlines five different methods.

Thomas, Edwin A, "Training needs identification: a turning point," Performance and Instruction, v.21, n.8, Oct 1982: p6-8.
Describes an approach to training needs identification that is directly tied to changing organizational events. Recommends questions to be asked of those whose positions in the organization make them subject matter experts. A table showing who should be asked what question is included.

Tobin, Helen M, Pat S Yoder Wise, and Peggy K Hull, The Process of Staff Development: Components for Change, 2nd edition, St Louis, C V Mosby, 1979: 248p.
Aimed at trainers and administrators of nursing services, this book covers organization and administration, roles and relationships, budgets, philosophy purpose and goals, adult learning, changing behavior, needs assessment, designing and implementing the program, strategies to facilitate learning, evaluation and future directions.

Torshen, Kay P, The Mastery Approach to Competency-Based Education, New York, Academic Press, 1977.
The goal of this book is to provide practitioners and advanced students with a synthesis and critical evaluation of the theory, research, and practical experience derived from investigations of competency-based education throughout the twentieth century. The first section focuses upon issues and problems relevant to implementation of competency-based educational programs covering a wide range of subject matter areas and student age levels, from preschool through graduate and professional

training. The remaining two sections contain an in-depth consideration of the mastery model for curriculum structure that continues to be widely used in competency-based educational programs at all academic levels, as well as in business and industrial training programs.

Tracey, William R, Designing training and development systems. Revised edition. New York: Amacom, 1984. 503p.
Has a chapter on the systems approach, which covers needs analysis, objectives, program design and evaluation. The chapter on needs analysis defines four assessment types, gives various methods, and includes checklists. There are chapters on training objectives, selecting media and training strategies, developing training materials, selecting instructors and trainees, evaluation and following up graduates.

"Trainability testing," Training Officer, v.14, ns. 11-12 1978: 279-280.
In trainability tests, first the instructor teaches the applicant the test task (chosen because it incorporates essential elements of the work for which selection is being made). A standardised form of instruction is used, and during the teaching period the applicant is free to ask questions. After this the applicant is asked to perform the task unaided. The instructor evaluates the performance by noting errors on a standardised error check list, then rates the performance and compares the test result with expected results for applicants. If the result falls below the cut-off point the applicant is rejected. The test is intended to show how well the applicant can absorb instruction and apply it. The test also gives the applicant a taste of the job he/she is applying for. Some applicants withdraw their applications after trainability testing, because they decide they do not like the work. If such applicants had been taken on, they probably would soon have left, so trainability testing also reduces turnover of staff. Many trainability tests are for blue collar jobs, and new developments in trainability tests may be in the white collar area.

Training and development handbook: a guide to Human Resource Development, edited by R L Craig, 3rd ed., New York, McGraw-Hill, 1987: 878p.
A book of 49 readings by different authors. Covers the training and development function, program design and development, media and methods of instruction, training applications, and resources. Some articles listed separately.

ED209561
Training in the Human Services Vol. II: Papers presented at the fall conference on training in the human services, edited by Richard L Edwards and Thomas D Morton. Atlanta, Georgia, Tennessee University, Knoxville, Oct 16-18, 1978: 279p.
Needs assessment, program design, and evaluation are presented in a series of 12 papers for trainers, educators, and practitioners interested in training for human service practice. Needs assessment is discussed in terms of direct interpersonal approaches; indirect interpersonal approaches; and social indicator approaches. Weaknesses of needs assessment are identified and discussed in terms of lack of

clear cut definitions, interpreting and weighting data collected, lack of well defined training competency hierarchies, and the difficulty of extracting useful information on the existing knowledge and sophistication within the target population. Included in this section are two papers describing needs assessments undertaken in a mental health center and with service providers in gerontology. Program design is reviewed with specific attention paid to size, purpose, economy and the sociopolitical environment. Seven papers follow that report on large scale training programs, a program that utilizes Telecommunication Satellites, a state-wide inservice program for social workers, a rural rape crisis program, a community college-based program and a description on how to use information science in design. A background to the evaluation of training programs in human services is provided. Included in this section are three papers that address issues related to evaluation of training effectiveness.

ED201720

Training of trainers, edited by Claudette D Chmura, Washington: National Training and Development Service for State and Local Government, 1981, 116p.
Curriculum package for public sector trainers aimed at improving skills in the assessment of training needs, design and implementation of programmes, and evaluation of training programmes. Can be used for private study or as part of a 5 day workshop. Contains 4 leader's guides and 4 participants' sourcebooks.

"Training terms: mastery learning nobody flunks," Training, v.22, n.5, May 1985: p.141- (2p).

"Training terms: needs analysis: a concept in search of content," Training, v.18, n.7, 1981: 57- (2p).
Editorial comment.

"Training terms: the Delphi Technique,", Training, v.15, n.8, Aug. 1978: 8.

"Training today: an alternative to 'tell us where it hurts' needs analysis," Training, v.18, n.5, May 1981: 91.
Editorial comment.

"Training today: competency model integrates performance, knowledge, skill," Training, v.20, n.4, April 1983: 15-16.
A competency statement is neither a performance objective nor a behavioral description. Think of behaviors, performance, tasks, knowledge and skill as parts of a system; then think of competence as the system itself.

"Training today: don't forget systems approach to program design," Training, v.19, n.9, Sept. 1982:
Editorial comment.

"Training today: let's resolve to write better training objectives," Training, v.16, n.12, Dec 1979: 18.
Editorial comment.

"Training today: the trouble with performance appraisal," Training, v.21, n.4, April 1984: 91- (2p).

Trattner, Marvin H, "Synthetic validity and its application to the uniform guidelines validation requirements," Personnel Psychology, v.35, n.2, Summer 1982:383-397.
The Uniform Guidelines for Employee Selection Procedures created a need for efficient validation methods that can be generalised to a class of occupations. One method currently authorised by the Guidelines is synthetic validation. Describes approaches to synthetic validity. Recommends Primoff's J-Coefficient approach.

Trivett, David A, Competency programs in higher education, Washington D.C., American Association for Higher Education, 1975.

Turner, B E, A survey into staff training needs in residential establishments, (Management, catering, housekeeping and non-specialist caring), Auckland: Institutional Training Advisory Committee, 1984. 153p.
An extensive survey of training needs using interview and questionnaire methods. Results are reported and the author gives his comments and opinions. A further survey is being conducted throughout New Zealand and a questionnaire form is included.

Turrell, M, Training analysis: a guide to recognising training needs, Plymouth Macdonald and Evans, 1980.

Tyler, Leona Elizabeth and W B Walsh, Tests and measurements, 3rd ed. Englewood Cliffs, New Jersey: Prentice-Hall, 1979.

Tyler, Ralph W, "A rationale for program evaluation," in: Evaluation models: viewpoints on educational and human services evaluation, edited by George F Madaus, Michael Scriven and Daniel L Stufflebeam, Boston, Kluwer-Nijhoff Publishing, 1983: 67-78.

Tyson, Lynn A, and Herman Birnbrauer, "High quality evaluation," Training and Development Journal, (USA), v.39, n.9, 1985:33-37.
Gives general information on what the ideal evaluation program should have, and demonstrates the use of checklists as feedback instruments to avoid omission and duplication. There are two checklists; one for design and development and one for learning conditions.

Ulschak, F L, Human Resource Development: the theory and practice of needs assessment, Reston, Va. Reston Publishing, 1983.
Part I covers the Training Cycle overview, discussion of the needs assessment environment and criteria for selection of methods. Part II covers needs assessment methods, including the generic methods, nominal grouping, the delphi technique, the critical incident technique, competency-based management, assessment centres, performance appraisal, assessment of training needs for career development, and exit interviews. Part III covers Planning and Evaluation.

Universal Training Systems Co, How to develop and conduct successful in-company programs, Chicago: Dartnell Corporation, (1976) 329p.
Accompanied by tape: Successful in-company training, (22 minutes).

Utt, Charles T, "Flow-process charts: how they help determine employee training needs," Training, v.19, n.1, Jan. 1982: 80- (2p).

Utt, Charles, "Try force field analysis, too," Training, v.14, Dec. 1977: 19.
Somewhere between front end analysis (needs assessment) and rear end analysis (evaluation) is force field analysis - analyzing the forces "for" and "against" a change in behaviour of an individual or group. This article has a brief text and 2 diagrams to illustrate how this is done.

van Maanen, John, The process of program evaluation, a guide for managers, Washington D.C.: National Training and Development Service Press, 1973.

Vinton, K L, A O Clark and J H Seybolt, "Assessment of training needs for supervisors," Personnel Administrator, v.28, n.11, 1983: 45-51.

Warr, P B and M W Bird "Assessing the training needs of foremen," Journal of Management Studies, v.4, n.3, 1967: 332-353.

Warren, Malcolm W, Training for results: a systems approach to the development of human resources in industry, 2nd edition, Reading, Massachusetts: Addison-Wesley, 1979.
Presents training as a system with components flexible enough to fit into different models, depending on the needs and resources of the individual organisation. Includes examples of different approaches to training and provides charts and checklists to serve as planning and evaluation guides.

ED255724
Watson, A, Measuring educational achievement in TAFE. Diploma of Teaching, (Technical). Directed study booklet, Haymarket, Sydney:Sydney College of Advanced Education, Institute of Technical and Adult Teacher Education, 1984. 72p.
A booklet designed to help teacher education students identify and explain certain basic principles of educational measurement and apply them to the development of a valid reliable assessment program. There

are five topics; an overview of adult achievement measurement in TAFE, the two principles of reliability and validity, how to plan an assessment program, construction of tests and treatment of test results.

ED209239

Watson, R, Instructional systems development, Paper presented to the International Congress for Individualised Instruction, 1981. 12p.
The U.S. Army chose the ISD approach to training for the entry level soldiers with low educational backgrounds. Normal five ISD phases with each phase consisting of; description of target population, skills and knowledge required for each task, behaviorial objectives and criterion-referenced test items.

Wentling, Tim L, Evaluating occupational and training programs, 2nd ed. Boston: Allyn and Bacon, 1980.

ED102353

Westinghouse Learning Corporation, Prevocational basic skills module. Vocational behaviour objectives: a guide for individualizing instruction, New York:Westinghouse Learning Corporation, 1973. 30p.
Curriculum guide dealing with prevocational basic skills at the secondary level of vocational education and industrial arts. Objectives suit individual systems and can be for small or large groups. Major tasks broken down to subtasks at four levels of competency.

ED102356

Westinghouse Learning Corporation, Metal trades modules. Vocational behavioral objectives: a guide for individualizing instruction, New York:Westinghouse Learning Corporation, 1973. 47p.
Guide focussing on metal trades at the secondary level of vocational education and industrial arts. There are two skill modules, welding and sheetmetal welding formulated to be compatible with individual programs or small/large groups. Major tasks are broken into subtasks which have four levels of competency.

ED219591

Weston, Kathleen M, The apprenticeship and blue collar system: Putting women on the right track, San Francisco: Urban Management Consultants of San Francisco Inc., 1982. 230p.
This guide provides a systems approach to increasing the numbers of women in apprenticeships and skilled blue collar jobs, which form the Apprentice and Blue Collar, (ABC), system. The chapters follow the progress of a 'typical' woman through the system - outreach and recruitment, orientation, counselling and tutorials, training, referral, job development and follow-up. There is emphasis on overcoming sex stereotyping in non-traditional occupations.

ED236406

Wichowski, Chester P, Researchable problems and implications for T and I education drawn from the Vocational Education Study, Paper presented at the American Vocational Association Convention, (Anaheim, California), 1983. 21p.

Findings from a survey to determine researchable problems or implications for T and I education. Sections and frequency of responses; distribution of funds (25), programs and services for special needs students, (22), overcome sex bias and stereotyping, (21), planning improvement, (20), extending and improving programs, (16), and strengthening evaluations, (17).

ED226171

Wichowski, Chester and Gordon McMahon, Trends and issues in trade and industrial education, Paper presented at the American Vocational Association Convention, (New Orleans), 1980. 26p.

Findings from a survey of state and territorial level supervisors of T and I education. Eleven categories of trend and issue are; advisory boards, articulation curriculum, delivery, follow up/placement/evaluation, funding, guidance and counselling, special needs students, program planning and access, sex-role equity and teacher preparation and upgrading.

Williams, R G, "A behavioural typology of educational objectives for the cognitive domain," Educational Technology, v.17, 1977: 39-46.

Contains a refinement of Gagne's model. The limitations of William's model are criticized by Hunt (1986) in "Needs assessment in adult education: tatical and strategic considerations." (see above)

ED255656

Williamson, Bert and Joe F Pedersen, Performance testing in electronic technology. Final report, Mount Vernon, Washington:Skagit Valley College, 1984. 97p.

A set of 21 performance tests in electronics technology developed on the basis of a review of commercial and noncommercial instructional materials relevant to electronics. Each test includes information on purpose, time limits, materials needed for administration and procedures, and notes on grading standards.

ED192166

Williamson, Stephen A and Mary Lou Schaalman, The assessment of occupational competence. 2. Assessment centers: theory, practice and implications for education, Boston:McBer and Co., 1980. 301p.

One of seven chapters in a report examining the assessment of occupational competence, this chapter looks at assessment centers, beginning with their origins and development to current practice. Key issues are discussed, such as; is the center useful as a way of identifying competencies? Does it measure potential or current ability? To what use do organisations put data gathered on individuals?

Wittingslow, Dr George E, "Making training effectiveness work," Training and Development in Australia, v.13, n.4, Dec. 1986: 8-9.
This paper discusses the problems of definition, setting criteria, and measuring the effectiveness of evaluating training outcomes. Using single case methodology and a new research instrument (SBQ) with traditional measures, it was possible to measure the effectiveness of the particular training course at all four levels of the Kirkpatrick model.

Wolansky, W D "Evaluation of employer sponsored skill training and development programs," Canadian Vocational Journal, v.20, n.4 - v.21, n.1, 1985: 21-25.
This review article describes, and in places mildly criticises, the central findings of several major approaches to evaluatory methodologies and their main principles. The central points of agreement reached by the reviewer are that most trainers recognise that it is critical to determine very accurately the current job description of each employee if needs analysis is to yield meaningful data for planning training; that it is necessary to maintain an active file of performance including strengths and weaknesses observed and discussed over time; specify realistic performance expectations and standards to be met as a result of identified training needs; determine ratings based on observable defined behaviours rather than character traits; communicate appraisals to subordinates in face-to-face scheduled meetings. The review concludes with the assertion that there is no substitute for experience and practice in helping individuals to become critical self-evaluators.

Woodington, Donald, "Some impressions of the evaluation of training in industry," Phi Delta Kappan, v.61, n.5, Jan. 1980:326-328.
The author gives five impressions on the state of evaluation of training programs in industry. He takes the position that evaluation is given short shrift.

Wright, Patrick M and Kenneth N Wexley, "How to chose the kind of job analysis you really need," Personnel, May 1985: 51-55.
No one best method of job analysis exists. The usefulness of a technique depends on the purpose for which the data is subsequently used. In this article, first, a framework describing the types of information that can be collected through job analysis is presented. Next, some of the more popular types of job analysis are described. Finally, the kinds of information needed for various personnel activities and the methods that provide it are discussed.

Yaney, J P, "A critical review of the instructional technology mechanism of task analysis," Improving Human Performance, v.3, 1974: 64-70.

Youngman, Michael Brendon et al. Analysing jobs. Farnborough, Hants, (U.K.): Gower, 1978.
An explanation of how to do a job analysis on complex occupations such as those of professional people (e.g. engineers). The authors have

developed a methodology for the analysis of work which takes into account organisational structure on the one hand, and the attitudes which people bring to their work on the other; for the performance of individuals and enterprises is a function of the way in which they interact with each other and a function of the way in which the organisation couples with the open system which is variously called society, the economy or the market, and the history of innovation within the organisation. Most of the book is about the development of a method for this kind of systems analysis. Three chapters describe the technique, analysis of a case study, and its outcomes. Other chapters address the more general implications such as the extent to which the traditional education system may be imposing its values, status distinctions and stratifications on working organisations in the manufacturing sector. This book is described in the forward as innovative and challenging.

Zemke, Ron, "Behavioral observations: why the 'count and chart' approach to task analysis pays off," Training, v.16, n.9, Sep. 1979: 90- (3p).

Zemke, Ron, "Goal setting is the first step in any performance program," Training, v.17, n.7, July 1980: A5- (2p).

Zemke, Ron, "How to conduct a needs assessment for computer literacy training," Training, v.20, n.9, Sep. 1983:24-27, 30-31.
Indicates that the most pervasive training challenge of the 1980's and 1990's is making sure that an organisation becomes computer literate. Suggests that the ability to analyse needs effectively and prescribe training precisely will be crucial for success.

Zemke, Ron, "Job competencies: can they help you design better training?", Training, v.19, n.5, May 1982: 28- (4p).
A growing number of trainers use the concept of competencies to help them determine what trainees need to learn; but precisely what makes a competency is still up in the air. This article reports interviews with a variety of experts each with a different view of competencies. It appears that each expert is enthusiastic about the results of their view. Only time will tell if they have overestimated or underestimated the potential of a competency approach.

Zemke, R, "Needs analysis: a concept in search of content," Training, v.18, n.7, 1984: 57-58.

Zemke, Ron, "Still trying to figure things out? Try using the critical incident method," Training HRD, April 1979: 70-73.
Brief description of the critical incident method, with 2 example case studies cited. Repeats part of chapter on the critical incident method in the book by Zemke and Kramlinger (See below).

Zemke, Ron, "Task analysis: figuring out what people need to learn," Training HRD, v.14, Dec. 1977: 16-20.
Discusses 5 different types of task analysis: the Look-and-see approach, the structure-of-knowledge approach, the critical incident approach, the process/decision flow chart approach and the consumer-research techniques. (See also book by Zemke and Kramlinger, listed below).

Zemke, Ron, "The systems approach: a nice theory, but...," Training, v.22, n.10, 1985: 103-108.
Results of a readership survey of whether firms actually do the component parts of a systems approach. They found distinctly different "clusters" of practices under the systems umbrella. They concluded that, out there in the real world, it is more the exception than the rule to be practicing a rigorous, full-scale systems approach the way the text books spell it out. Something called a systematic approach to the design, development and delivery of training is alive and well in the field. It is not, however, a single, universal set of practices followed by even a large minority of trainers. What "systematic" means depends a lot on the practitioner, the industry in which he works and the size of his organization.

Zemke, Ron, "Training terms: competency-based training v.s. criterion referenced instruction: What's the difference?", Training, v.21, n.3, March 1984: 81-82.
The concensus of opinion is that they are different words for the same thing.

Zemke, Ron, "Using testing instruments in your training effort," Training, v.19, n.11, Nov. 1982: 30- (6p).

Zemke, Ron and John Gunkler, "28 techniques for transforming training into performance," Training, v.22, n.4, April 1985: p.48-63.
This article gives 28 ways in which a trainer might go about increasing the probability that a skill learned in the classroom is used back on the job. The authors point out that the problem of transferring learning to actual use on the job is a perennial one.

The suggested techniques are not exhaustive, but are a start in the right direction.

Zemke, Ron and Thomas Kramlinger. Figuring things out: a trainer's guide to needs and task analysis. Reading, Massachusetts: Addison-Wesley, 1982: 348p.
A comprehensive manual on the various types of needs and task analyses. Describes the techniques and tactics of the way the authors, in their own consulting work, approach the analysis of human performance problems. A first step is to decide whether the solution is training or something else. Section I describes the authors' strategic and tactical approach. Section II covers observation methods of task analysis. Section III covers other methods including (1) focus group

discussions, (2) one-to-one interviews, and (3) telephone interviews. Section IV covers more methods (1) the critical incident technique, (2) concensus groups, and (3) surveys and questionnaires. Section V describes the analysis of information gathered, including making hypotheses about what the performance problem is, and choosing the most opportune locus for intervention to solve the problem. Also described are fault tree analysis and how to use learning hierarchies in task analysis. Section VI gives guidelines on when to use what method for both organisational and technical criteria, and how to select the right technique for a particular problem. Section VII covers how to report results to management. Appendix A is a reprint of Gagne's speech on task analysis, and Appendix B is Flanagan's original article on the critical incident technique.

Zenger, J H and K Harris, "Assessing training results: It's time to take the plunge!", Training and Development Journal, (USA), v.36, n.1, 1982: 10-16.
The author's experience confirms that adequate research technology exists for assessing training results. The research is not expensive compared to the total training expenditure. Suggestions are made for good research design. Results must be cautiously interpreted. A defined percentage of the total training budget should be allocated to evaluation.

Zepke, Nick, Occasional papers No.24: in pursuit of excellence. A personal view of vocational education in the United States, Lower Hutt: Tutor Training Unit for New Zealand Technical Institutes, 1985. 72p.
Concentrates on competency-based instruction, computer-assisted learning and ongoing professional development, but also covers the accountability of educators, vocational resources in America and equity issues. Contains a section on occupational analysis, (training needs analysis), and a subsection on the DACUM process. The final chapter relates the information to the New Zealand environment.

COMMON ABBREVIATIONS

AND WHAT THEY STAND FOR IN THE TRAINING CONTEXT

C B E	Competency-Based Education,
C B I	Competency-Based Instruction,
C B V E	Competency-Based Vocational Education,
C R I	Criterion Referenced Instruction,
H R D	Human Resource Development,
I D	Instructional Development,
I S D	Instructional Systems Development, (also called Systems Approach)
M B O	Management by Objectives,
S M E	Subject Matter Expert,
T and I	Trade and Industrial (Education)
T N A	Training Needs Analysis or Training Needs Assessment,
Voc. Ed.	Vocational Education.